SHCHELKACHEV, V. N. PROF

64T76

USSR/Petroleum Industry Apr 1948
Bibliography

"Review of N. V. Tikhonravov's Book, 'Petroleum'," Prof V. N. Shchelkachev, 2½ pp

"Neft Khoz" No 4

Intended as reference book for middle schools in the field of the history and techniques of the petroleum industry. Very well written book.

LC 64T76

SHCHELKACHYEV, V. N.

PA 65T52

USSR/Geology
Tectonics

May 1948

"The Propagation of Disturbances in a Stratum," V. N. Shchelkachyev, 2 pp

"Neft Khoz" Vol XXVI, No 5

Author refers to article by E. B. Chekalyuk. Disagrees on several points made by Chekalyuk and presents entirely different method to study the distribution of stratal pressure that allows tracing beyond the effective radius of an interstice.

65T52

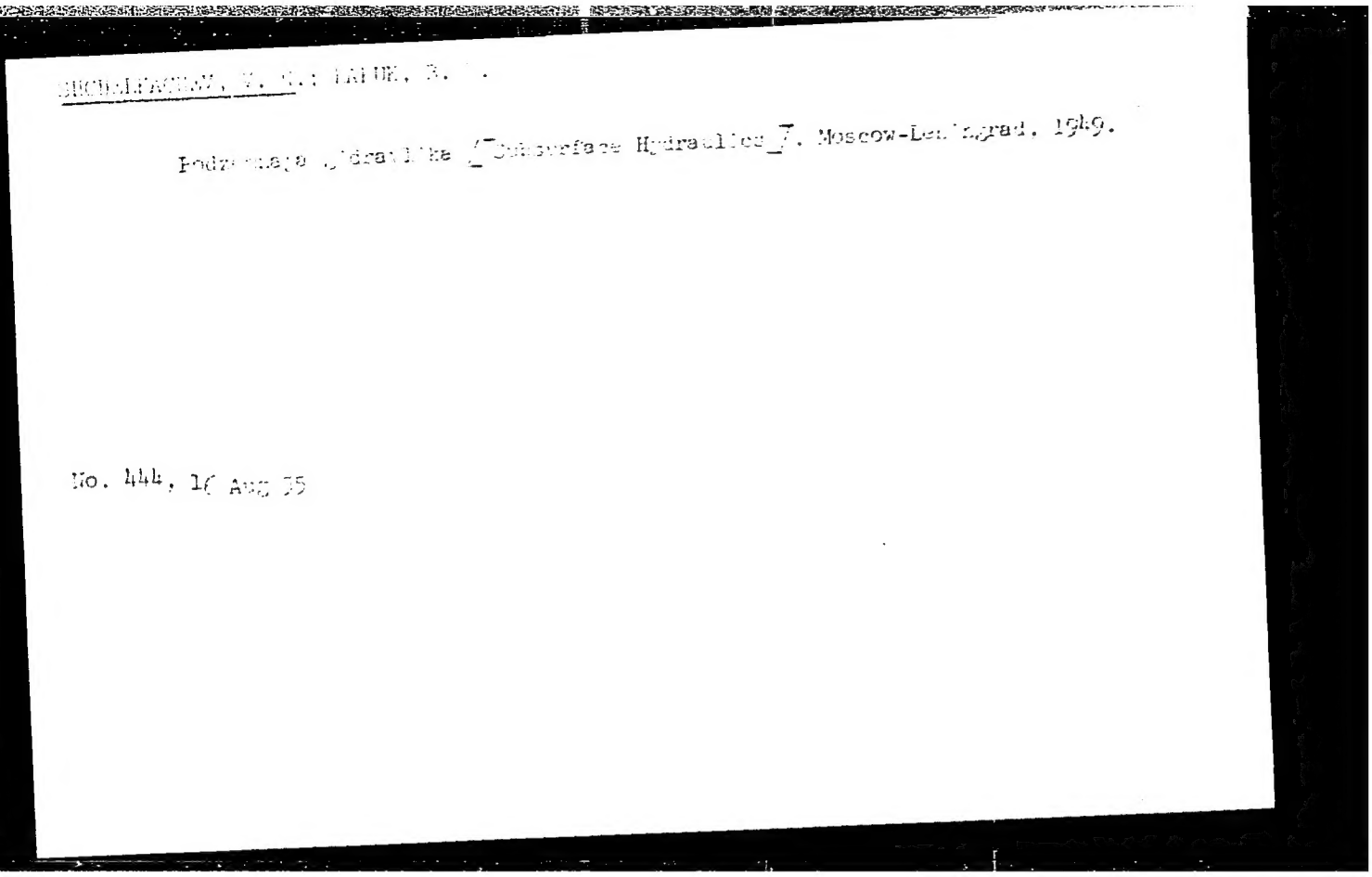
LC

SHCHELKACHEV, V. N. (Prof.)

"Generalization of Ideas in the Radii of Influence of Wells," Dokl. AN SSSR, 54, No.2, 1948

SHCHELKACHEV, V. N. (Prof.)

"The Propogation of Disturbances in a Stratum," Dokl. AN SSSR, 54, No.6, 1948



[illegible], V. I.; [illegible], B. [illegible].

Podzemnaya gidravlika [Subsurface Hydraulics]. Moscow-Leningrad, 1949.

No. 444, 14 Aug 55

SHCHELKACHEV, V. N.

22469. SHCHELKACHEV, V. N. Provavleniya Uprugogo Rezhima Pri Eksploatatsii Skvazhin Trudy Mosk. Neft. In-ta Im. Akad Gubkina, Vyp. 9, 1949, S. 3-36.

SO: Letopis' No. 30, 1949

SHCHELKACHEV, V.N., doktor tekhnicheskikh nauk, professor.

Calculating formation pressures and well yields in connection with edge-water drive. Trudy MNI no.11:40-56 '51. (MLRA 10:3)
(Oil field flooding)

SHCHELKACHEV, V. N.

USSR/Physics - Filtration Flow, Nonstationary

1 Aug 51

"Investigating the Nonstationary Filtration Flow of an Elastic Fluid Toward a Circular Battery of Sinks," V. N. Shchelkachev

"Dok Ak Nauk SSSR" Vol LXXIX, No 4, pp 577-580

Investigates nonsteady plano-radial motion of homogeneous elastic fluid according to the linear law of filtration toward a circular battery of n equivalent sinks, evenly spaced, representing

211T92

hydrodynamically ideal wells sunk in a homogeneous elastic stratum of infinitely large extension. Submitted by Acad S. A. Khristianovich 9 Jun 51.

211T92

SHCHELKACHEV, V. N.

USSR/Physics - Elastic Fluid 11 Aug 51

"Application of Operational Methods to the Solution of the Problem Concerning the Motion of an Elastic Fluid in an Elastic Stratum," V.N. Shchelkachev

"Dok Ak Nauk SSSR" Vol LXXIX, No 5, pp 751-754

Investigates nonstationary plano-radial motion of a homogeneous elastic fluid according to the linear law of filtration to a hydrodynamically ideal well in an elastic stratum of infinitely large extension the regime of the stratum being elastic-"water forced." Assumes that the well is being exploited with const discharge. Submitted by Acad S. A. Khristianovich 9 Jun 51.

210T84

SERDIY, A.G., redaktor; STEPANYANTS, A.K., professor, redaktor; TIKHO-MIROV, A.A., kandidat ekonomicheskikh nauk, redaktor; VINOGRADOV, V.N., redaktor; CHERNOZHUKOV, N.I., professor, redaktor; SHCHEL-KACHEV, V.N., professor, redaktor; CHARYGIN, M.M., professor, redaktor; DURAYEV, F.F., professor, redaktor; KUZMAK, Ye.M., professor, redaktor; MURAV'YEV, I.M. professor, redaktor; GUREVICH, V.M., redaktor; MURATOVA, V.M., redaktor, POLOSINA, A.S., tekhnicheskiy redaktor.

[Sixth scientific and technical conference, 1951] Shestaia nauchno-tekhnicheskaia konferentsiia, 1951. Moskva, Gos.nauchno tekhn.izd-vo neftianoi i gorno-toplivnoi lit-ry, 1952, 214 p. (MLRA 8:10)

1. Moscow. Moskovskiy neftianoy institut. Nauchnoye studencheskoye obshchestvo.
(Petroleum geology)

SERDIY, A.G., redaktor; TIKHOMIROV, A.A., kandidat ekonomicheskikh nauk, redaktor; STEPANYANTS, A.K., professor, redaktor; VINOGRADOV, V.N. redaktor; CHERNOZHUKOV, N.I., professor, redaktor; SHCHELKACHEV V.N., professor, redaktor; CHARYGIN, M.M. professor, redaktor; KUZ'MAK, Ye.M., professor, redaktor; MURAV'YEV, I.M. professor, redaktor; GUREVICH, V.M., redaktor; MURATOVA, V.M., redaktor; TROFIMOV, A.V., tekhnicheskiy redaktor.

[Seventh scientific and technical conference, 1952] Sed'maia nauchno-tekhnicheskaia konferentsiia, 1952. Moskva, Gos.nauchno tekhn.izd-vo neftianoi i gorno-toplivnoi lit-ry, 1953. 171 p. (MLRA 8:10)

1. Moscow. Moskovskiy neftianoy institut. Nauchnoye studencheskoye obshchestvo.
(Petroleum Geology)

SHCHELKACHEV, V.N., professor, doktor tekhnicheskikh nauk.

Natural characteristics of the movement of liquid particles from injection wells to producing wells. Trudy MNI no.12:117-126 '53. (MLRA 9:8)

(Petroleum engineering) (Fluid dynamics) (Oilfield flooding)

ZOLOYEV, M.T.; MIKHAYLOVSKIY, N.K.; SHCHELKACHEV, V.N., professor, doktor tekhnicheskikh nauk.

Some characteristics of the oil-water boundary shift in the case of peripheral flooding in sloping sands. Trudy MNI no.12:126-138 '53. (MLRA 9:8)

1. Glavnyy geolog tresta Tuymazaneft' (for Zoloyev); 2. Nachal'nik geologicheskogo otdela tresta Tuymazaneft' (for Mikhaylovskiy).
(Oilfield flooding)

SHCHELKACHEV,V.N., professor, doktor tekhnicheskikh nauk

Calculating the sums of even powers of intervals to vertices of a rectilinear polygon. Trudy MVI no.13:130-132 '53.
(Polygons) (MLRA 8:6)

Subject : USSR/Mining AID P - 334

Card : 1/1

Authors : Shchelkachev, V. N. and Nazarov, S. N.

Title : Consideration of influence of hydrodynamic non-perfection of holes under flexible conditions

Periodical : Neft. Khoz., v. 32, #5, 35-41, My 1954

Abstract : The authors present a review of work of different investigators, given in 10 references. The review concerns the computation of variation in pressure drop in wells under different hydrodynamic conditions during the first month of exploitation. The authors present nine formulae, two tables and ten Russian references (1948-53).

Institution : None

Submitted : No date

ZHIGACH, K.F., professor, redaktor; STEPANYANTS, A.K., professor, redaktor; TIKHOMIROV, A.A., kandidat ekonomicheskikh nauk, redaktor; KARAPETYAN, R.O., kandidat filosoficheskikh nauk, redaktor; CHERNOZHUKOV, N.I., professor; YERSHOV, P.R., redaktor; GUREVICH, V.M., redaktor; MURAV'YEV, I.M., professor, redaktor; SHCHELKACHEV, V.N., professor, redaktor; CHARYGIN, M.M., professor, redaktor; DUNAYEV, F.F., professor, redaktor; KUZMAK, Ye.M., professor, redaktor; POLOSINA, A.S., tekhnicheskiy redaktor.

[Ninth scientific and technological conference of 1954]Deviataia nauchno-tekhnicheskaia konferentsiia 1954. g. Moskva, Gos. nauchno-tekhn.izd-vo neftianoi i gorno-toplivnoi lit-ry. 1955. 205 p. [Microfilm] (MLRA 8:9)

1. Moscow. Moskovskiy neftianoy institut. Nauchnoye studencheskoye obshchestvo.
(Geology) (Petroleum)

LEYBENZON, Leonid Samuilovich, 1879-1951 (deceased); NEKRASOV, A.I., akademik; TIKHONOV, A.N.; IL'YUSHIN, A.A.; SOKOLOVSKIY, V.V.; GALIN, L.A.; SHCHELKACHEV, V.N., doktor tekhnicheskikh nauk; TREBIN, F.A., doktor tekhnicheskikh nauk; GRIGOR'YEV, A.S., kandidat tekhnicheskikh nauk; SEDOV, L.I., akademik, redaktor; ZVOLINSKIY, N.V., professor, redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor.

[Collected works] Sobranie trudov. Moskva, Izd-vo Akademii nauk SSSR. Vol.4[Hydroaerodynamics. Geophysics] Gidroaerodinamika, Geofizika, 1955. 398 p. (MLRA 8:11)

1. Chlen-korrespondent AN SSSR (for Tikhonov, Il'yushin, Sokolovskiy, Galin)

(Geophysics) (Fluid dynamics)

LEYBENZON, Leonid Samuilovich, akademik; NEKRASOV, A.I., akademik; TIKHONOV, A.N.; IL'YUSHIN, A.A.; SOKOLOVSKIY, V.V.; SHCHELKACHEV, V.N., doktor tekhnicheskikh nauk: TREBIN, F.A., doktor tekhnicheskikh nauk, redaktor; GALIN, L.A.; GRIGOR'YEV, A.S., doktor tekhnicheskikh nauk; CHARNYY, I.A., doktor tekhnicheskikh nauk, redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor.

[Collected works] Sobranie trudov. Moskva, Izd-vo Akademii nauk SSSR. Vol.3.[Petroleum engineering] Neftepromyslovaia mekhanika 1955. 678 p. (MLRA 8:10)

1. Chlen-korrespondent AN SSSR (for Tikhonov, Il'yushin, Sokolovskiy and Galin)
(Petroleum engineering)

15-57-7-10346

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7, p 250 (USSR)

AUTHORS: Snarskiy, A. N., Loginov, B. G., Yeronin, V. A., Shchelkachev, V. N.

TITLE: Results of Heat Application (Vystupleniya v preniyakh)

PERIODICAL: V sb: Metody uvelicheniya nefteotdachi plastov. Moscow, Gostoptekhizdat, 1955, pp 107-113

ABSTRACT: Bibliographic entry

Card 1/1

124-57-1-764

Translation from. Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 100 (USSR)

AUTHOR: Shchelkachev, V.N.

TITLE: Formulation of the Problem and Investigation of Some Laws Governing the Flooding of a Well in the Simplest Conditions (Postanovka zadachi i issledovaniye nekotorykh zakonomernostiy obvodneniya skvazhiny v prosteyshikh usloviyakh)

PERIODICAL: Tr. Mosk. neft. in-ta, 1955, Nr 14, pp 184-196

ABSTRACT: A substantiation of the possibility that the flow in a petroliferous layer which is subdivided by a number of nearly impervious interlayers may be examined as a two-dimensional flow. In such a layer the problem is formulated relative to the determination of the flooding of a well as a function of time and of the initial petroliferous contour. A specific problem is examined for a hydrodynamically perfect well in which the initial petroliferous contour is star-shaped with respect to the well. The difference of viscosity of the oil and the water is disregarded, and the liquids and reservoir rocks are assumed to be incompressible and uniform. The reverse problem is also formulated, namely, the determination of the initial petroliferous contour that corresponds to a given law governing the flooding. Computational examples are adduced. V.L.Danilov

Card 1/1

1. Petroleum--Recovery--Mathematical analysis 2. Oil wells--Flooding --Theory

SHCHELKACHEV, V.N.

Making formulas more exact for calculating sums of even powers of intervals to vertices of a rectilinear polygon. Trudy MNI no.14: 280-283 '55. (Polygons) (MLRA 8:11)

SHCHELKACHEV, V. N

USSR/ Mathematics - Hydromechanics

Card 1/1 Pub. 22 - 8/51

Authors : Shchelkachev, V. N.

Title : Simplification of solutions of a Fourier differential equation for problems connected with the inclusion of round sets of sources and flows

Periodical : Dok. AN SSSR 101/2, 225-228, Mar 11, 1955

Abstract : A simplified and reliable solution was found for a Fourier differential equation involving the inclusion of round sets of sources and flows. The solution is also recommendable for problems concerning the theory of heat conductivity, theory of diffusion and other similar problems. Four USSR references (1951-1953). Diagram.

Institution : The I. M. Gubkin Petroleum Institute, Moscow

Presented by: Academician L. I. Sedov, November 13, 1954

SHCHELKACHEV, V.N.

Exploitation of oil fields by using central instra-boundary flooding. Neft.khoz. 34 no.2:30-38 F '56. (MLRA 9:5)
(oilfield flooding)

SHCHELKACHEV, V.N.

Observations on the method of planning oil well spacing. Neft.khoz. 34 no.10:27-32 O '56. (MLRA 9:11)
(Oil fields) (Petroleum engineering)

11(4) PHASE I BOOK EXPLOITATION SOV/1443

Moscow. Neftyanoy institut.

Voprosy dobychi nefti i mashinostroyeniya (Problems of Petroleum Production and Petroleum Engineering) Moscow, Gostoptekhizdat, 1957. 393 p. (Its: Trudy, vyp. 20) 1,000 copies printed.

Executive Eds.: Martynova, M.P., and K.P. Svyatitskaya; Tech. Ed.: Polosina, A.S.; Editorial Board: Zhigach, K.F. (Resp. Ed.) Professor, I.M. Murav'yev, Professor, A.A. Tikhomirov, Candidate of Economic Sciences, Yegorov, Candidate of Economic Sciences, M.M. Charygin, Professor, F.F. Dunayev, Professor, I.A. Charnyy, Professor N.I. Chernozhukov, Professor, Ye. M. Kuzmak, Professor, V.N. Dakhnov, Professor, G.M. Panchenkov, Professor, N.S. Nametkin, Doctor of Chemical Sciences, N.A. Almazov, Docent, V.I. Biryukov, Docent, V.N. Vinogradov, Docent, E.I. Tagiyev, V.M. Gurevich.

PURPOSE: This book is intended for specialists working in the petroleum and gas industry and for advanced students at petroleum vuzes.

Card 1/6

COVERAGE: The book is a collection of articles written by professors and faculty members of the Petroleum Institute im. Academician I.M. Gubkin. It deals with problems connected with the development of oil-bearing mother rocks, radiometry as applied to oil wells, production of carboxymethyl ethers of cellulose and their use in drilling to open productive formations. Methods for softening the sea water used in preparing drilling mud, the selection of the type of steel for rock bit cutters, the theory of circular milling with plain milling cutters, and the flow of viscous liquids in rotating pipes and open channels are also discussed in individual articles. There are 50 references, of which 24 are Soviet.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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Card 6/6

SOV/124-58-11-12904

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 149 (USSR)

AUTHOR: Shchelkachev, V. N.

TITLE: Peculiarities of the Progressive Water Flooding of a Well in Uniformly and Nonuniformly Stratified Sloping Reservoirs (Osobennosti progressiruyushchego obvodneniya skvazhiny v odnorodno- i neodnorodnosloistom naklonnykh plastakh)

PERIODICAL: Tr. Mosk. neft. in-ta, 1957, Nr 20, pp 13-22

ABSTRACT: The author examines a sloping stratified reservoir stratum of constant thickness, in which oil drains into a hydrodynamically perfect well under the pressure exerted by the edge waters. It is assumed that the liquid moves toward the well solely in the direction of the stratification surfaces, that the motion obeys the linear seepage law, and that the differences between the viscosities and densities of the oil and water may be disregarded. Having made these assumptions the author investigates the process of the water flooding of the well first for the uniformly stratified reservoir and then for the nonuniformly stratified one. The formulas and graphs obtained characterize the process of water flooding in either case;

Card 1/2

SOV/124-58-11-12904

Peculiarities of the Progressive Water Flooding of a Well

numerical examples are adduced. Bibliography: 5 references.

V. A. Karpychev

Card 2/2

SHCHELKACHEV, Vladimir Nikolayevich,; SAVINA, Z.A., ved. red.; MUKHINA, E.A., tekhn. red.

[Exploitation of oil fields in the United States; status and trends] Razrabotka neftianykh mestorozhdenii v SShA; analiz sostoianiia i tendentsii razvitiia. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 37 p.

(MIRA 11:11)

(United States--Oil fields)

SHCHELKACHEV, V.N.

Analysis of average indicators of United States oil field exploitation and trends revealed by changes in them. Geol. nefti 2 no.5: 64-71 My '58. (MIRA 11:5)

1. Moskovskiy ordena Trudovogo Krasnogo Znameni neftyanoy institut im. akademika I.M. Gubkina.
(United States--Petroleum engineering)

AUTHOR: Chchelkachev, V.N. SOV-5-58-3-26/39

TITLE: The Present State of the Theory of Flexibility of Water and Oil Bearing Strata (Sovremennoye sostoyaniye teorii uprugogo rezhima vodonosnykh i neftenosnykh plastov)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, Nr 3, pp 153 - 154 (USSR)

ABSTRACT: This is a resume of a lecture given on Mar 20, 1958. The basic features of a flexible condition are: continuity at a redistribution of pressure, extraction of the flexible reserve liquids of the strata at lowered pressure. The author distinguishes two types of flexible conditions: flexible water pressure and locked flexible conditions. During the past 10 years, extensive research on the flexibility of blanket deposits of water and oil has been conducted in the USSR. Soviet scientists arrived at an empiric formula, which

Card 1/2

The Present State of the Theory of Flexibility of Water and Oil Bearing Strata

enables one to calculate the coefficient of volumetric flexibility of the water, when the gravimetric concentration of salt in the water and its relative specific weight under blanket deposit conditions is known.

1. Geology--USSR 2. Water--Pressure--Analysis 3. Water--Gravimetric analysis 4 Petroleum--USSR

Card 2/2

11(2,4) PHASE I BOOK EXPLOITATION SOV/2530

Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti.

Problemy nefti i gaza (Oil and Gas Problems) Moscow, Gostoptekhizdat, 1959. 362 p. (Series: Its: Trudy, vyp 24) Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Ministerstvo vysshego obrazovaniya SSSR.

Exec. Ed.: G. F. Morgunova; Tech. Ed.: I. G. Fedotova; Editorial Board: K. F. Zhigach, Professor (Resp. Ed.), I. M. Murav'yev, Professor, A. A. Tikhomirov, Candidate of Economic Sciences, V. N. Vinogradov, Candidate of Technical Sciences, M. M. Charygin, Professor, F. F. Dunayev, Professor, I. A. Charnyy, Professor, V. N. Dakhnov, Professor, G. M. Panchenkov, Professor,

PURPOSE: This collection of articles is intended for specialists in the petroleum and gas industry. It will also be of interest to scientific research institutes, teachers and students of vuzes.

COVERAGE: This collection of articles reviews problems connected with natural and synthetic gas production. A number of articles are devoted to the study of regional oil- and gas-bearing zones, the crystalline beds underlying the Volga-Urals petroliferous region, tectonics of the Caspian depression, seismic prospecting, oil well logging, development of oil and gas fields, petroleum-bearing formations and their physicochemical characteristics, and petroleum engineering. Other articles deal with gas turbine engines and their possible use in the oil and gas industry, the production of carboxymethylcellulose compounds, the application of ion exchange tars to the organic catalysis, continuous coking of heavy petroleum residues, (fluidization), the improvement of lube oil production, and the influence of acid esters on properties of lubricating oil and grease. The book contains a number of photographs, tables, flow sheets, and diagrams, among which those relating to coal gasification and conversion of heavy petroleum residues over a fluidized bed catalyst deserve special attention. References accompany individual articles.

SHCHELKACHEV, Vladimir Nikolayevich; GUBANOV, A.I., kand.tekhn.nauk,retsenzent; PETROVA, Ye.A., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Production of oil and water layers operating under elastic compression] Razrabotka neftevodonosnykh plastov pri uprugom rezhime. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1959. 467 p. (MIRA 12:10)
(Oil reservoir engineering)

SHCHEKOTOVICH, V. (Novosibirsk)

The cause of a fire has been determined. Pozh. delo 5 no.10:14 O '59. (MIRA 13:2)
(Novosibirsk--State farms--Fires and fire prevention)

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E081/E241

AUTHORS: Denisov, Yu. N., Troshin, Ya. K., and Shchelkin, K.I.
(Moscow, Novosibirsk)

TITLE: The Analogy Between Combustion with Explosive Waves and (Combustion) in a Rocket Engine

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, 1959, Nr 6, pp 79-89 (USSR)

ABSTRACT: The paper is a continuation of previous work (Refs 1, 2, 6, 7, 12, 13, 14, 17). The combustion chamber of a rocket engine is regarded as a cylindrical tube (Fig 1a). The fuel and oxidant is fed through the head 2 and forms the mixture in zone 1. After chemical conversion of the initial fuel in the combustion zone 2, gaseous products are formed in zone 3. [Fig 1. - a: scheme of combustion chamber; b: pressure diagram in schematic plane of explosive waves; c: schematic representation of a disturbance in the ignition zone.] The original state of the material is characterised by the initial parameters: pressure p_1, density ρ_1, temperature T_1, and flow velocity u_1, and by final parameters: pressure p_3, density ρ_3, temperature T_3 and flow

Card 1/3

The Analogy Between Combustion with Explosive Waves and Combustion in a Rocket Engine

velocity u_3. Q is the energy evolved in passing from the initial to the final state. These quantities are connected by the Hugoniot equation (top of p 80), in which $\varkappa = (\gamma + 1/\gamma - 1)$ where γ is the ratio of specific heats c_p/c_v. The Hugoniot is shown in Fig 2. [Hugoniot adiabatics. For descriptiveness both branches of the adiabatics EM and KM are represented by the same energy evolution Q which is independent of the initial pressure of the reacting mixture] in coordinates p, V, where $V = 1/\rho$ = specific volume. Analysis of the physical significance of the branches of the Hugoniot curve shows that the deflagrational portion KA (Fig 2) can be regarded as the geometrical locus of points each of which corresponds to a given amount of boost of the combustion process in a rocket engine. It is shown that this process may be unstable, the instability being determined by Eq (5) in which ΔT is the temperature change of the gas in the disturbed region and τ is the induction period of ignition. The variation of τ with temperature is given by Eq (6), where E is the

Card 2/5

The Analogy Between Combustion with Explosive Waves and Combustion in a Rocket Engine

activation energy and R is the gas constant. If the constant k is independent of temperature and pressure, the criterion for instability of the plane ignition zone in explosive waves in Eq (7) or in terms of pressure, Eq (8). Calculation shows that instability exists for many gaseous explosive mixtures, and leads to high frequency vibrations (Fig 3 - spin explosion). Figs 4 and 5 show the so-called normal explosion (Fig 4 taken with a low resolving power equipment; Fig 5 taken with higher resolving power equipment; mixture $2H_2 + O_2$, $p_0 = 760$ mm Hg, magnification along the z axis: G = 3, time axis 1 mm = 1 μsec; in Figs 3, 4, and 5 the z axis is horizontal and the time axis vertical). Fig 5 shows periodic inhomogeneities in the explosive wave front. These were further investigated by means of a deposit of soot on the inside of a glass tube in which the explosion took place and left the traces shown in Fig 6 (Step trace of a pulsating explosion. Mixture $2H_2 + O_2$, $p_0 = 300$ mm Hg, d = 16 mm, G = 5; propagation direction of explosive waves from bottom to

 4

The Analogy Between Combustion with Explosive Waves and Combustion in a Rocket Engine

top; the arrows show the tracks of periodic explosions; d is the diameter of the tube.) Analysis of experimental results shows that there are two types of explosive wave, spin (Fig 3, 7a, б) and pulsating (Fig 7в, б) (Fig 7: step traces in explosive mixtures $2H_2 + O_2$, a,б: Spin p_0 = 50 mm Hg, d = 16 mm, G for a = 1.3, for б = 2.25; в pulsating with n = 2, p_0 = 130 mm Hg, d = 11 mm, G = 2.5.) These two types of wave are illustrated in Fig 8, together with graphs showing numerical results. (Fig 8. Dependence of the explosive wave parameters on initial pressure in the reacting mixture (mixture $2H_2 + O_2$; d = 16 mm). a - explosive velocity D and the mean temperature in the wave T_A; б - form of the leading front of the explosive waves at times t_1 and t_2; I - spin; II - pulsating with the number n of pulsations round the contour of the tube = 1; III pulsating with n = 2; в - frequency and number of pulsations n. Experimental points obtained by the photographic method plotted as squares; remaining points obtained by the trace method.) The criterion for

Card 4/5

SHCHELKACHEV, V.N.; BARANOVSKAYA, N.N.; GOVOROVA, G.L.; GUSEYN-ZADE, M.A.

Studies of the department of theoretical mechanics on underground hydrodymanics and the theory of oil field production. Trudy MINKHiGP no.24:122-139 '59. (MIRA 13:3)
(Oil fields--Production methods)

SHCHELK-CHEV, V N

More exact representation of the approximate formula for determining the decline of pressure on walls of enlarged wells having steady yield. Trudy MINKHiGP no.33:5-13 '61. (MIRA 15:1)
(Oil reservoir engineering)

SHCHELKACHEV, V.N.

Estimating the error of a simple approximative formula for calculating the amount of fluid recovered from a layer. Izv. vys. ucheb. zav.; neft' i gaz 4 no.12:73-75 '61. (MIRA 15:12)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.

SHCHELKACHEV, V.N.

Graphs of the rise and fall of oil well bottom pressure and the skin effect in the simple strata. Trudy MINKHiGP no.33:14-26 '61. (MIRA 15:1)

(Oil reservoir engineering)

SHCHELKACHEV, V.N.

More exact representation of the mathematical formulation and approximate solution of one of the basic problems in the theory of elastic drives. Trudy MINKHiGP no.33:27-41 '61. (MIRA 15:1)
(Oil reservoir engineering)

SHCHELKACHEV, V.N.

More exact representation of the result of basic dynamic equations of the flow theory. Izv. vys. ucheb. zav.; neft' i gaz 4 no.2: 87-93 '61. (MIRA 15:5)

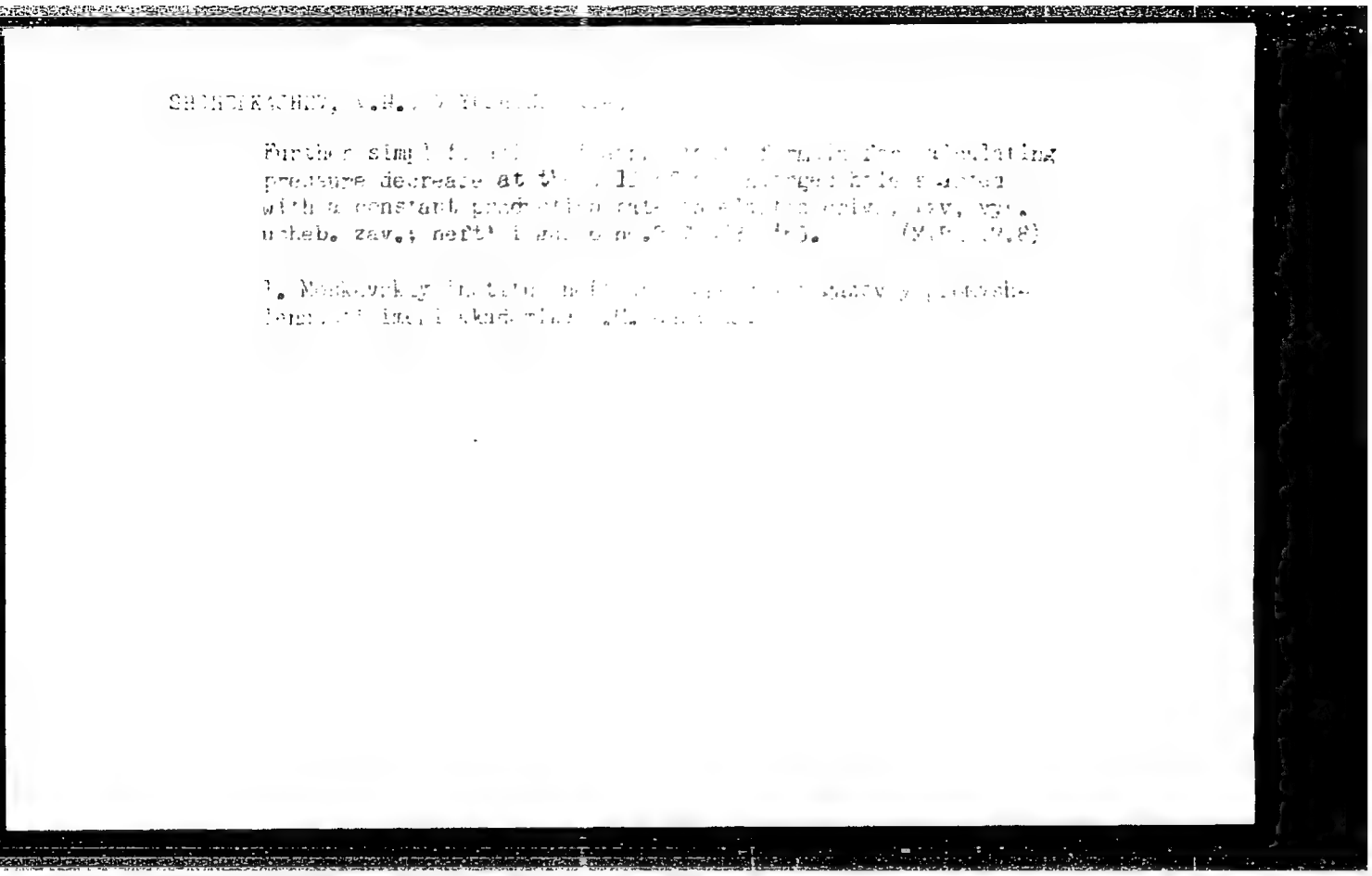
1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshelnnosti imeni akademika I.M.Gubkina.

(Hydrodynamics)

MURAV'YEV, I.M., SHCHELKACHEV, V.N.

Brief outline of the 45 years of the publication of "Neftyanoe khoziaistvo." Neft. khoz. 40 no.12:9-13 D '62. (MIRA 16:7)

(Petroleum production—Periodicals)



SHCHELKACHEV, V.N.; VLYUSHIN, V.Ye.

Simplifying calculations of reservoir pressure in the operation of a circular line in an elastic drive. Izv.vys.ucheb.zav.; neft' i gaz 6 no. 12:81-85 '63. (MIRA 17:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im.akademika I.M.Gubkina.

[redacted], V.N.

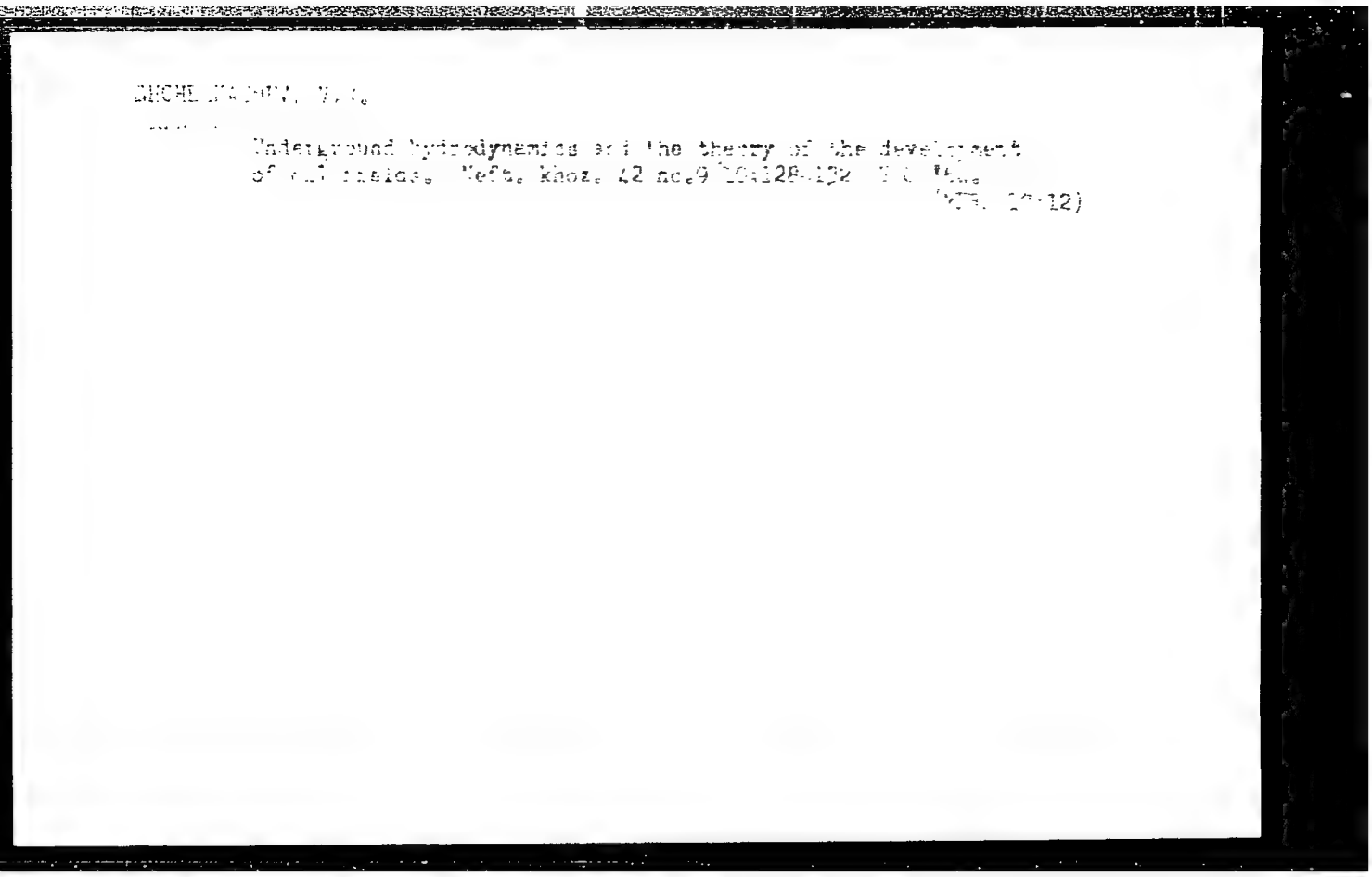
Simplifying the calculations of inflow to circular lines in elastic drive. Trudy MINKHiGP no.48:14-40 '64.

(MIRA 18:3)

GOVOROVA, G.L.; SALTYKOVA, Z.A.; SHCHELKACHEV, V.N.

Analyzing the rates of withdrawal and depletion of reserves in various stages of the development of oil fields in the United States. Trudy MINKHiGP no.48:260-273 '64.

(MIRA 18:3)



[illegible], V. I.

Underground hydrodynamics and the theory of the development of oil fields. Neft. khoz. 42 no.9 [illegible] (MIRA 17:12)

SHCHELKACHEV, V. N. (Moscow)

"The present state of teaching of theoretical mechanics in the USSR Higher Technical Schools".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics. Moscow, 29 January - 5 February 1964.

VLADIMIROV, L.A.; SAMARSKY, A.A.; SHCHELKACHEV, V.N. (Moscow)

"The solution of special boudary value problems of the unsteady motion of an elastic fluid in a elastic layer with the aid of electronic computers"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

KIL'CHEVSKIY, N.A.; SHCHELKACHEV, V.N.

Reviews. Prikl. mekh. 1 no.1:128-132 '65.
(MIRA 18:5)

SHCHELKACHEV, V.N.: SAMARSKIY, A.A.; VLADIMIROV, L.A.

Solving special boundary problems of nonsteady fluid flow in an elastic bed using electronic computers. Izv. vys. ucheb. zav.; neft' i gaz 8 no.3:77-80 '65. (MIRA 18:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akademika Gubkina i Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

SHCHELKACHEV, V.N.; VLYUSHIN, V.Ye.; KHARIN, O.N.

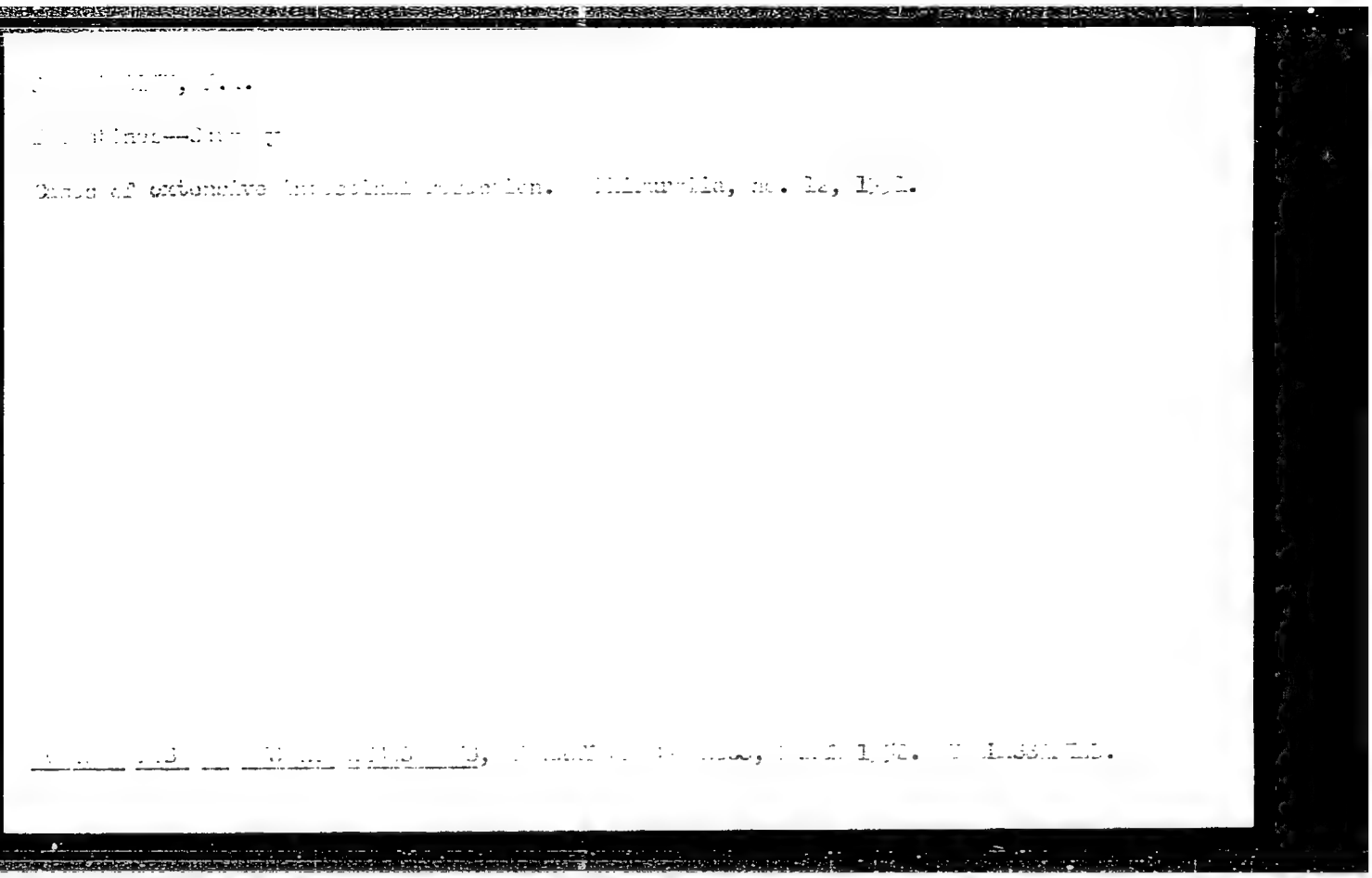
Deriving standard working formulas for the determination of the pressure in a bounded bed in an elastic regime. Izv. vys. ucheb. zav.; neft' i gaz 7 no.11:55-60 '64.
(MIRA 18:11)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I.M. Gubkina.

SHCHELKACHEVA, V.N., prof., red.; TKACHENKO, O.V., ved. red.

[Characteristics of the development of certain oil fields in North America]Osobennosti razrabotki nekotorykh neftianykh mestorozhdenii Severnoi Ameriki. Pod red. V.N.Shchelkacheva. Moskva, 1961. 157 p. (MIRA 15:9)

1. Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut nauchnoy i tekhnicheskoy informatsii.
(United States--Oil reservoir engineering)



SHCHELKANOV, A.F., inzh.

Effect of the hardness and microstructure on the resistance of steel to abrasive wear and cavitation. Energomashinostroenie 11 no.1:32-36 Ja '65. (MIRA 18:4)

PHASE I BOOK EXPLOITATION SOV/5298

Akademiya nauk SSSR. Ural'skiy filial. Gorno-geologicheskiy institut.

Podzemnaya razrabotka rudnykh mestorozhdeniy (Underground Exploitation of Ore Deposits) Sverdlovsk [1960] 165 p. (Series: Its: Trudy, vyp. 54) 1,000 copies printed.

Editorial Board: K. V. Kochnev, Professor, Doctor of Technical Sciences; L. Ye. Zubrilov, Candidate of Technical Sciences; A. A. Ilivitskiy, Candidate of Technical Sciences. Ed. of Publishing House: M. S. Ebergardt; Tech. Ed.: N. F. Seredkina.

PURPOSE: This publication is intended for engineering and technical personnel in the mining industry.

COVERAGE: This is a collection of 22 articles by different authors on problems of underground exploitation of large massive ore deposits in the Urals. The articles are based on studies carried out in the Laboratory for the Exploitation of Ore Deposits of the Gorno-geologicheskiy institut UFAN SSSR (Institute of Mining Geology, Ural Branch AS USSR), between 1958-1959. No personalities are mentioned. Most of the articles are accompanied by references.

TECHNOLOGY OF UNDERGROUND EXPLOITATION

AVAILABLE: Library of Congress

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SHCHELKANOV, V.A., inzh.

Experimental determination of the resistance factor in the movement of certain rocks and ores. Izv.vys.ucheb.zav.; gor.zhur. no.4:31-41 '60. (MIRA 14:4)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy rudnykh i rossypnykh mestorozhdeniy.

(Mining engineering)

OVCHARENKO, V.N.; SHCHELKANOV, V.A.

Improving the system of mining inclined dikes at the Berezovskiy Mine. Trudy Gor.-geol.inst.UFAN SSSR no.54:103-110 '60.
(MIRA 14:6)

(Mining geology)
(Berezovskiy (Sverdlovsk Province)—Gold mines and mining)

SHCHELKANOV, V.A.

Using forces of explosion and gravity for the displacement of broken ore in mining gently inclined deposits. Trudy Gor.-geol. inst.UFAN SSSR no.54:149-154 '60. (MIRA 14:6)
(Mine haulage)

MOSHINSKIY, L.G., gornyy inzh.; SHCHELKANOV, V.A., gornyy inzh.

Increasing the efficiency of the development of inclined beds. Gor. zhur. no.10:46-48 O '61. (MIRA 15:2)

1. Sverdlovskiy sovnarkhoz (for Moshinskiy). 2. Gorno-geologicheskiy institut Ural'skogo filiala AN SSSR (for Shchelkanov).
(Iron mines and mining)

MOSHINSKIY, L.G., inzh.; NIKOLAYEV, S.I., inzh.; SHCHELKANOV, V.A., inzh.; IL'IN, A.M., inzh.

Underground operations in mines of the Nizhniy Tagil Metallurgical Combine. Biul. TSIICHM no.1:9-18 '61. (MIRA 14:9)
(Nizhniy Tagil region--Mining engineering)

MOSHINSKIY, Lazar' Grigor'yevich; SHCHELKANOV, Vladlen Aleksandrovich; SIFYAGINA, Z.A., red. izd-va; IL'INSKAYA, G.M., tekhn. red.

[Underground working of Ural iron ore deposits]Podzemnaia razrabotka zhelezorudnykh mestorozhdenii Urala. Moskva, Gosgortekhizdat, 1962. 138 p. (MIRA 15:11)
(Ural Mountains--Iron mines and mining)

OVCHARENKO, V.N.; SHCHELKANOV, V.A.

Increasing the efficiency of working inclined dikes in the Berezovskiy Mine. Gor. zhur. no.1:36-39 Ja '62. (MIRA 15:7)

1. Glavnyy inzhener Berezovskogo rudnika (for Ovcharenko).
2. Ural'skiy filial AN SSSR (for Shchelkanov).
(Berezovskiy region (East Kazakhstan Province)--Mining engineering)

SHCHELKANOV, V.A.; MOZZHEGOROV, A.S.

Evaluating of boring and blasting operations at the "IUzhnaia" Mine of the Blagodat' Mountain mining center. Trudy Inst.gor. dela UFAN SSSR no.7:95-98 '63. (MIRA 17:3)

SHCHELKANOV, V.A.

Improving chamber systems for mining flat ore deposits in the Ural Mountains. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. 16 no.7:5-9 '63. (MIRA 16:8)
(Ural Mountains--Iron mines and mining)

SURIN, V.V., glavnyy inzh.; ORLOV, V.S., gornyy inzh.; SHCHELKANOV, V.A., kand. tekh. nauk

Increasing the economic efficiency of underground mining at the "Mezhnaia" Mine. Gor. zhur. no.6:22-23 Je '64. (MIRA 17:11)

1. Gorodskaya rudoupravleniye (for Surin, Orlov). 2. Institut gornogo dela Ural'skogo filiala AN SSSR (for Shchelkanov).

VERNIKOVSKIY, K.B.; LUBENETS, I.P.; ORLOV, V.S.; SHCHELKANOV, V.A.; DENISOV, Ye.M.

Induced block caving at the Gora Blagodat' mine. Gor. zhur. no. 12:29-32 D '65. (MIRA 18:12)

1. Goroblagodatskoye zhelezorudnoye mestorozhdeniye (for Vernikovskiy, Lubenets, Orlov). 2. Institut gornogo dela, Sverdlovsk (for Shchelkanov, Denisov).

ACC NR: AP6032423 SOURCE CODE: UR/0103/66/000/009/0019/0026

AUTHOR: Shchelkanovtsev, N. M. (Moscow)

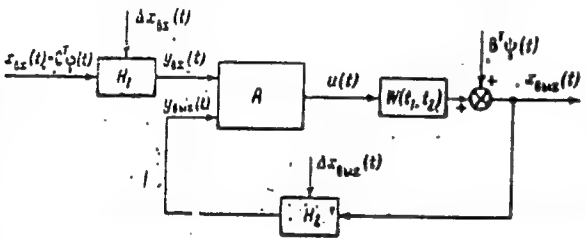
ORG: none

TITLE: One problem of optimal control of a linear plant by constrained controlling actions

SOURCE: Avtomatika i telemekhanika, no. 9, 1966, 19-26

TOPIC TAGS: optimal automatic control, automatic control design, automatic control R and D

ABSTRACT: An automatic control system is considered which consists (see figure) of a linear plant having a known weight function $W(t_1, t_2)$ and a corrector A that shapes controlling signals u(t). The corrector receives information about the input variable and the plant position via channels H_1 and H_2. In these channels, the useful signals are mixed with an



 UDC: 62-505.5/.7

SHCHELGACHEV, R.V.

Structural characteristics of a reverse starting system on Sulzer RD-type diesel engines. Inform. sbor. TSNIIMF no.101: Tekh. ekspl. mor. flota no.25:51-74 '63. (MIRA 17:9)

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Zharin, V.V. Ivashkin, V.I. Shchelkanov, V.I. Neporozhniy, P.S. Sevmerov, Yu.S. Ivranskiy, S.A. Chuntsov, A.I. Nikolov, A.P.	Popular Scientific and Technical Series for Engineering and Technical Workers, and Workers on Large Hydraulic Engineering Constructions"	All-Union Scientific Engineering and Technical Society of Constructors

SO: W-30604, 7 July 1954

AID P - 356

Subject : USSR/Engineering

Card : 1/1

Author : Shchelkanovtsev, M. S., Engineer

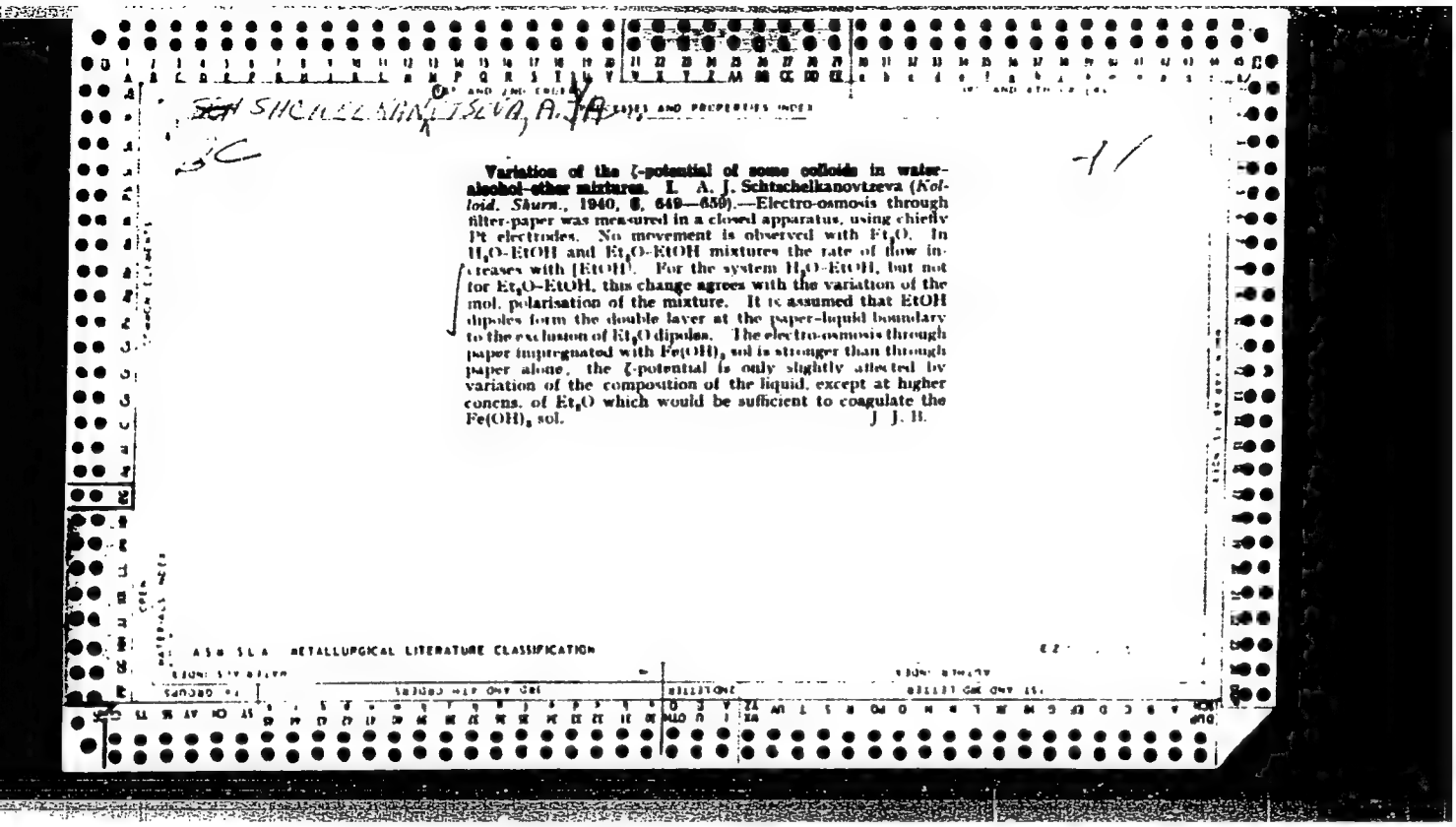
Title : Trestle for assembly of sectional reinforced concrete girders

Periodical : Sbor. mat. o nov. tekh. stroi., #4, 17, 1954

Abstract : A trestle made of gas pipes to which a hoist is attached for lifting and depositing in proper place of construction prefabricated heavy reinforced concrete girders (up to 1.5 tons of weight) is presented. The details are shown on a graph.

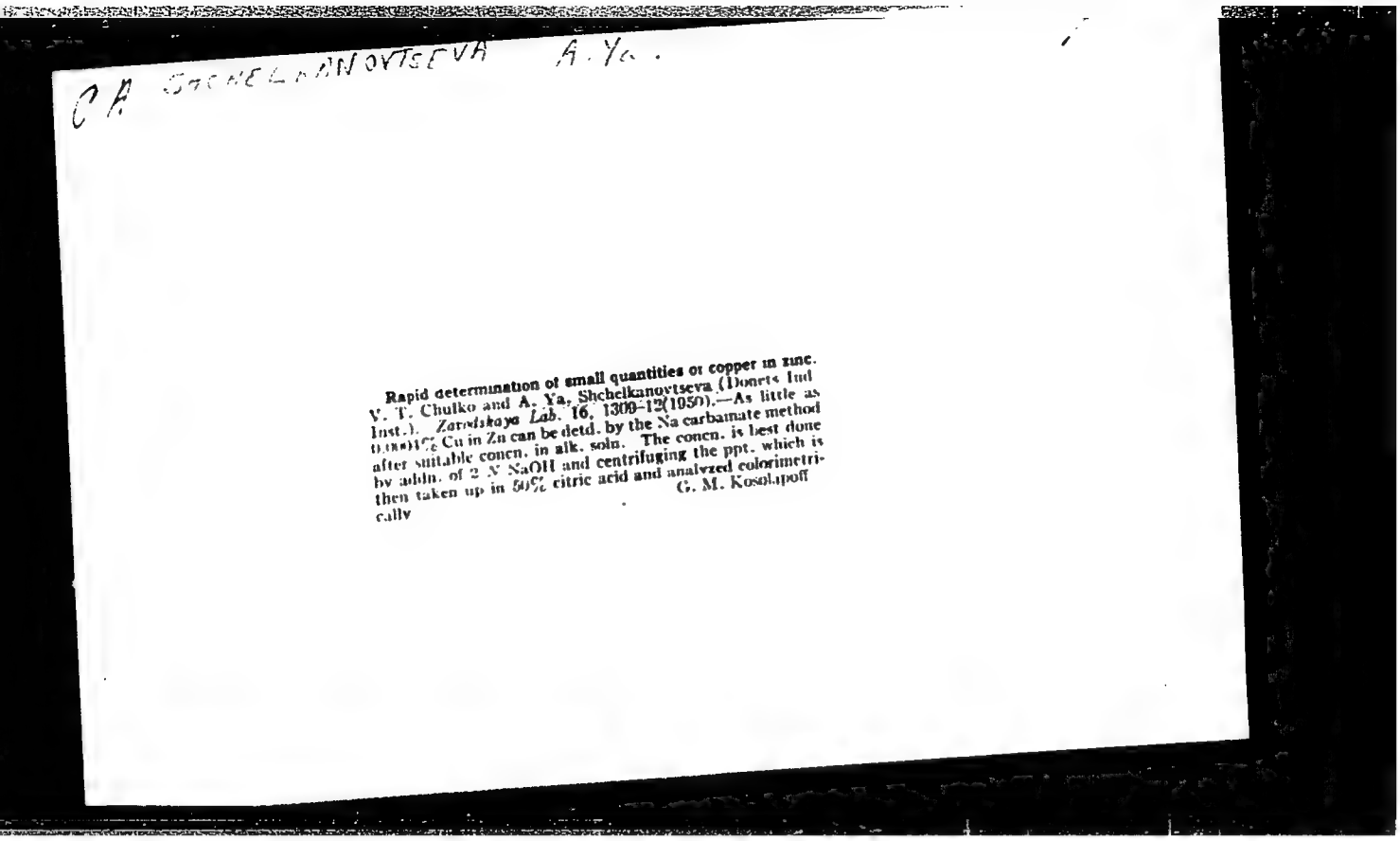
Institution : None

Presented : No date



SCHTSCHELKANOVTZEVA, A. J.

Variation of the ζ-potential of some colloids in water-alcohol-ether mixtures. I. A. J. Schtschelkanovtzeva (*Kolloid. Shurn.*, 1940, **6**, 649—659).—Electro-osmosis through filter-paper was measured in a closed apparatus, using chiefly Pt electrodes. No movement is observed with Et_2O. In H_2O-EtOH and Et_2O-EtOH mixtures the rate of flow increases with [EtOH]. For the system H_2O-EtOH, but not for Et_2O-EtOH, this change agrees with the variation of the mol. polarisation of the mixture. It is assumed that EtOH dipoles form the double layer at the paper–liquid boundary to the exclusion of Et_2O dipoles. The electro-osmosis through paper impregnated with $Fe(OH)_3$ sol is stronger than through paper alone, the ζ-potential is only slightly affected by variation of the composition of the liquid, except at higher concns. of Et_2O which would be sufficient to coagulate the $Fe(OH)_3$ sol. J. J. B.



CA SHCHELKANOVTSEVA A. Ya.

Rapid determination of small quantities of copper in zinc. V. T. Chulko and A. Ya. Shchelkanovtseva (Donets Ind Inst.). *Zavodskaya Lab.* 16, 1309–12(1950).—As little as 0.0001% Cu in Zn can be detd. by the Na carbamate method after suitable concn. in alk. soln. The concn. is best done by addn. of 2 *N* NaOH and centrifuging the ppt. which is then taken up in 50% citric acid and analyzed colorimetrically

G. M. Kosolapoff

137-58-6-13900

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 384 (USSR)

AUTHORS: Babenyshev, V.M., Shchelkanovtseva, A.Ya., Kuznetsova, O.M.

TITLE: Amperometric Titration of Bismuth with Potassium Ferricyanide (Amperometricheskoye titrovaniye vismuta ferritsianidom kaliya)

PERIODICAL: Sb. nauchn. tr. Kuybyshevsk. industr. in-ta, 1957, Nr 7, pp 37-43

ABSTRACT: Amperometric titration of bismuth by means of its precipitation as Bi $[Fe(CN)_6]$ with a solution of K_3 $[Fe(CN)_6]$ in a weakly nitric-acid medium has been studied. Near the point of equivalence a rounding off of the titration curve is noticed, which indicates a certain solubility of the precipitate. The titration is carried out at 0.9 v wherein diffusion current is produced by Bi^{3+} ions as well as $[Fe(Cn)_6]^{3-}$ ions. To obtain more precise results, the current intensity (i) is calculated according to the formula $i = i_{observed}(v+v_1)/v$, where v is the volume of the solution being titrated and v_1 is the amount of the solution of K_3 $[Fe(Cn)_6]$ added. The Bi precipitate is easily

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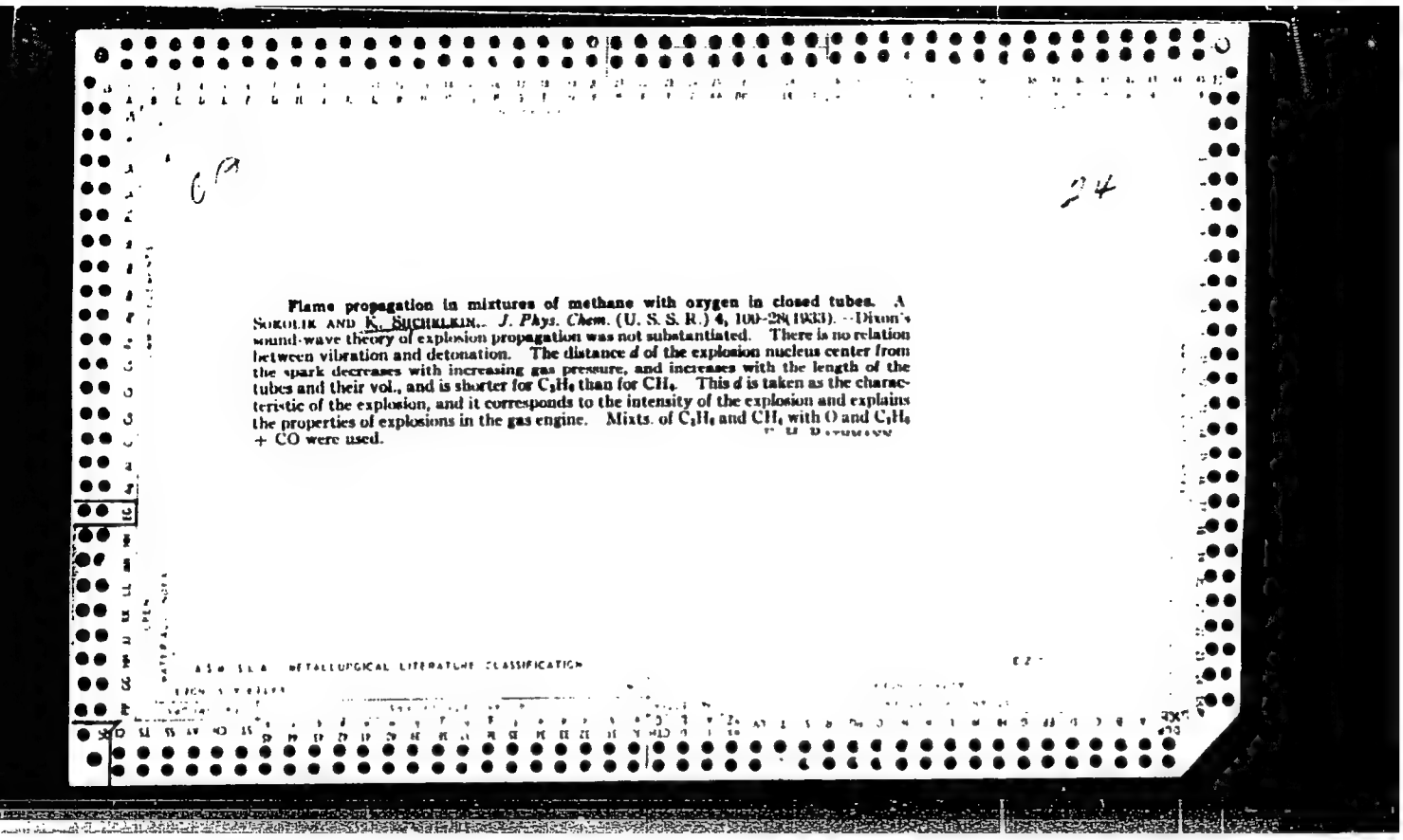
Amperometric Titration of Bismuth with Potassium Ferricyanide

soluble in the presence of Cl^- ions and tartrates which should be absent during titration. The precision of the titration of 0.01-0.003 M of Bi solution is ±1%.

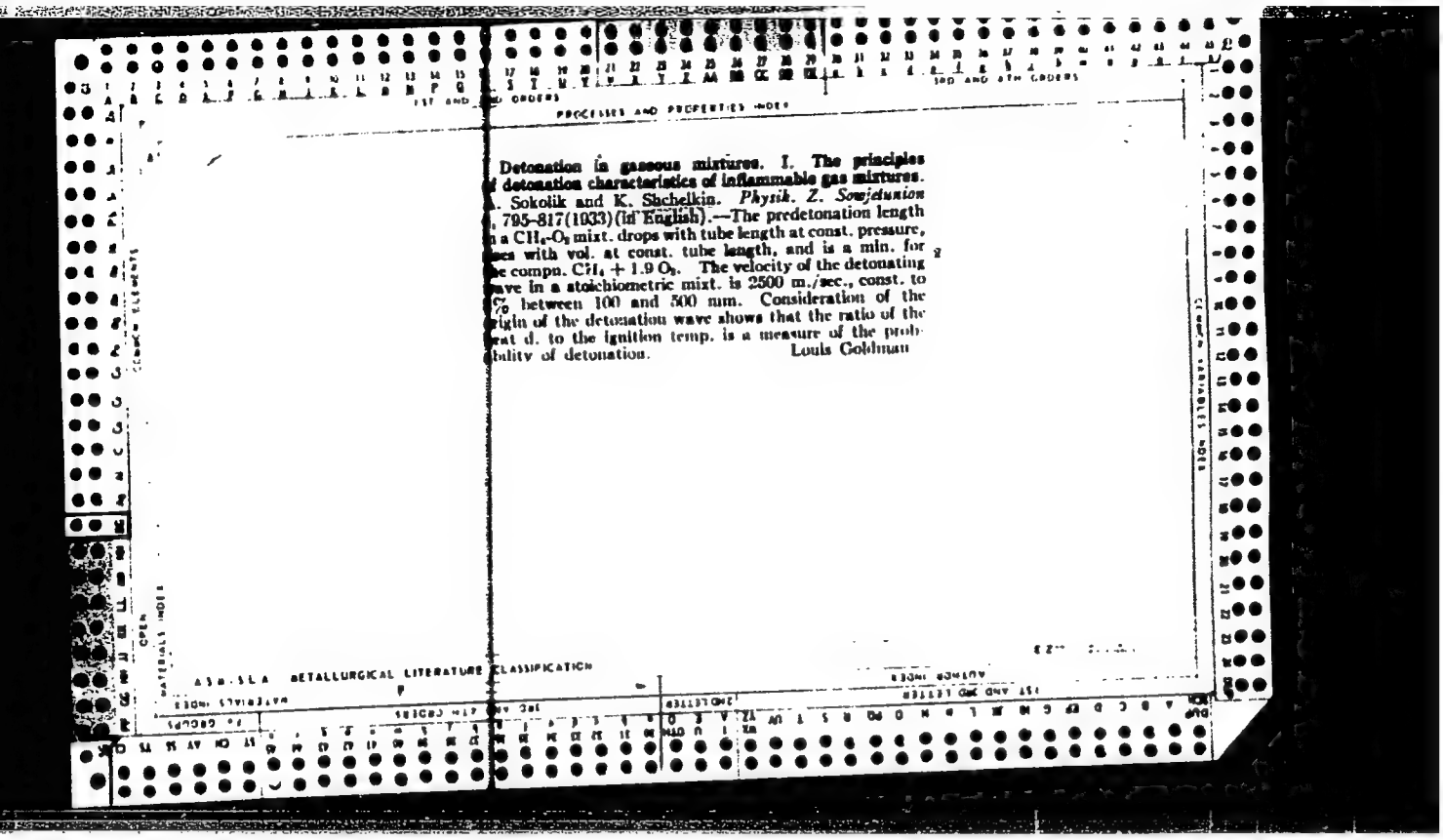
N.G.

1. Bismuth—Precipatation 2. Titration--Applications 3. Bismuth--Solubility

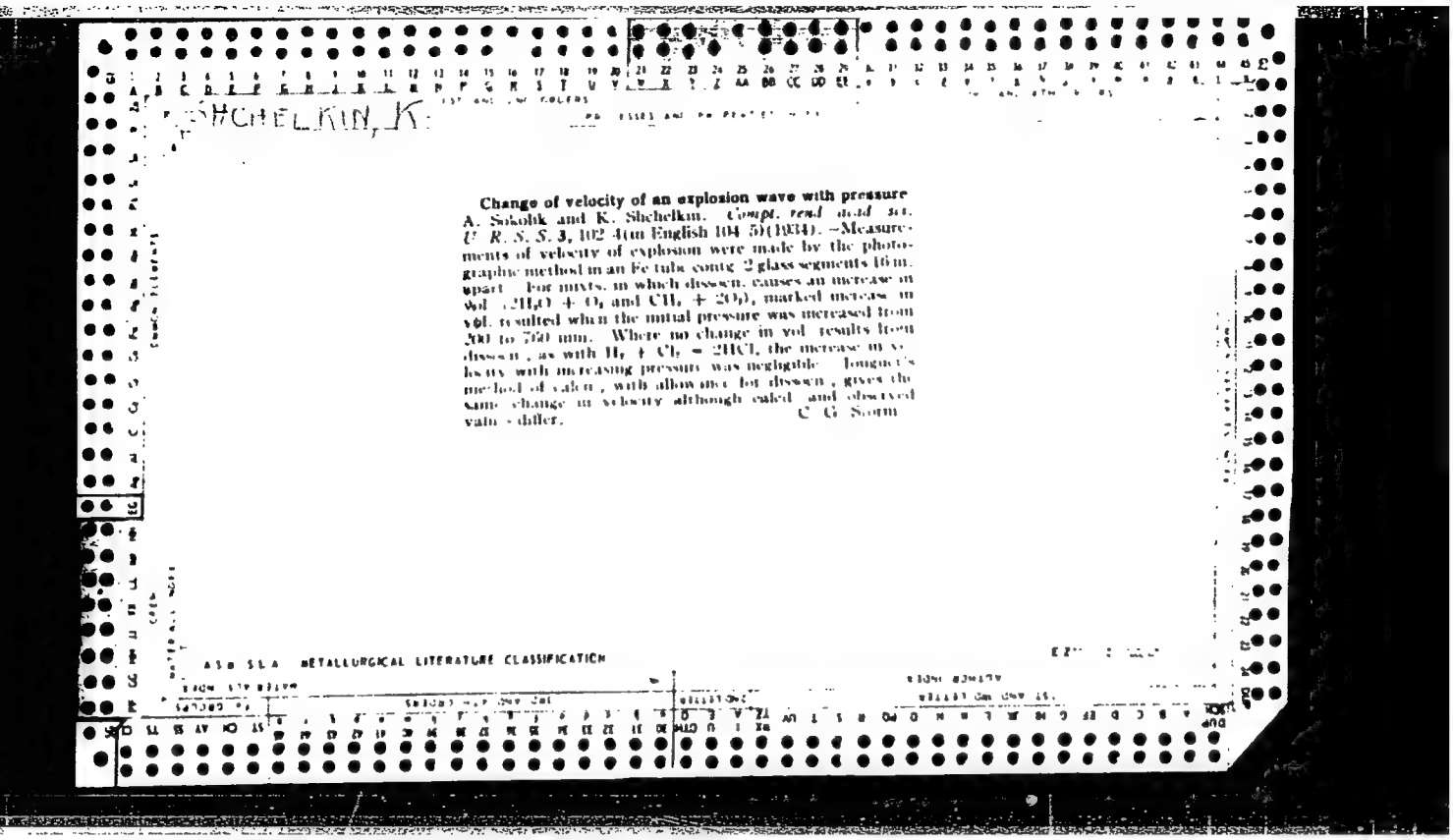
Card 2/2



Flame propagation in mixtures of methane with oxygen in closed tubes. A. SOKOLIK AND K. SHCHELKIN. *J. Phys. Chem.* (U. S. S. R.) **4**, 100-28(1933). --Dixon's sound-wave theory of explosion propagation was not substantiated. There is no relation between vibration and detonation. The distance *d* of the explosion nucleus center from the spark decreases with increasing gas pressure, and increases with the length of the tubes and their vol., and is shorter for C_2H_6 than for CH_4. This *d* is taken as the characteristic of the explosion, and it corresponds to the intensity of the explosion and explains the properties of explosions in the gas engine. Mixts. of C_2H_6 and CH_4 with O and C_2H_6 + CO were used.



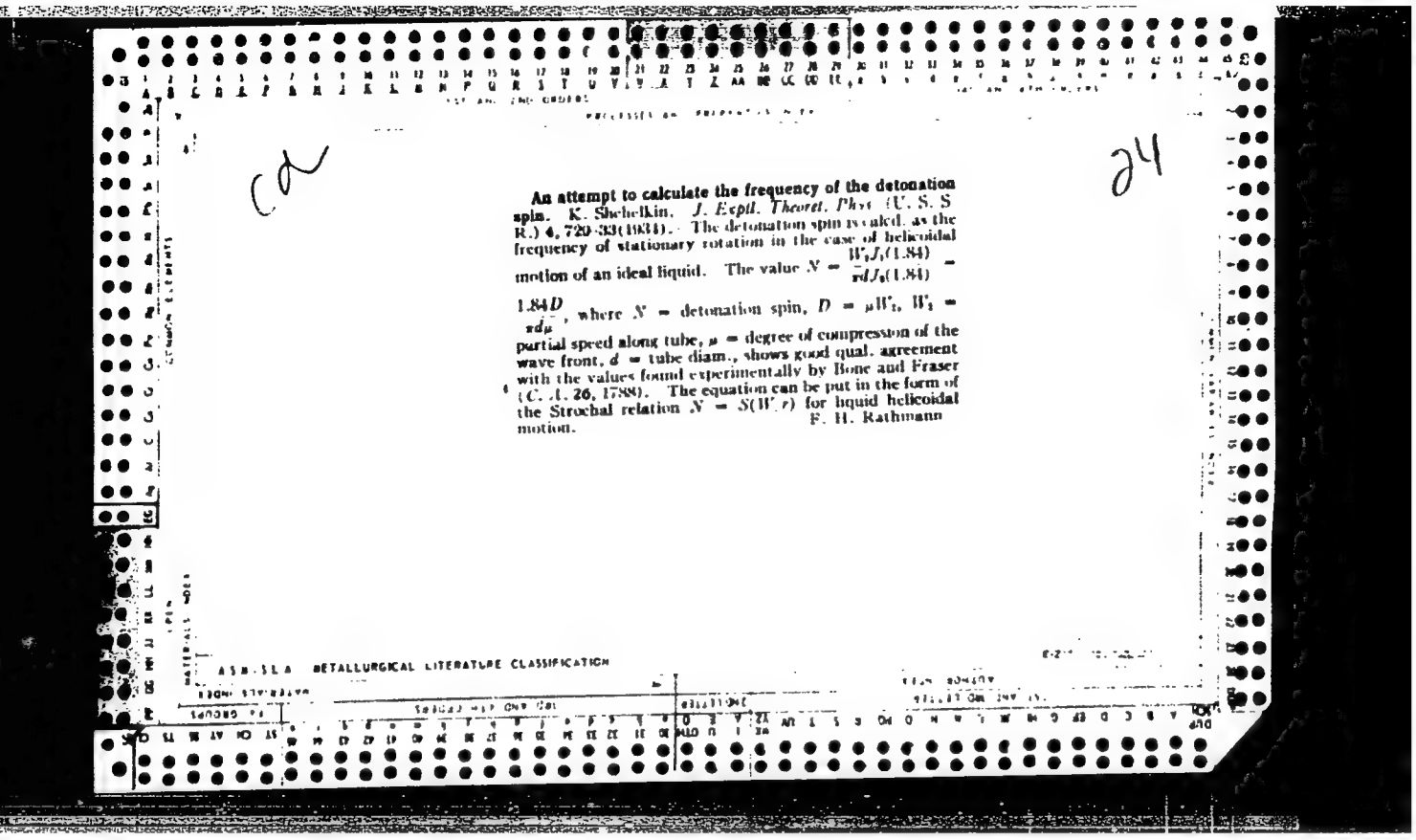
Detonation in gaseous mixtures. I. The principles of detonation characteristics of inflammable gas mixtures. . Sokolik and K. Shchelkin. *Physik. Z. Sowjetunion* , 795–817(1933)(In English).—The predetonation length n a CH_4-O_2 mixt. drops with tube length at const. pressure, es with vol. at const. tube length, and is a min. for e compn. $CH_4 + 1.9\ O_2$. The velocity of the detonating ave in a stoichiometric mixt. is 2500 m./sec., const. to % between 100 and 500 mm. Consideration of the igin of the detonation wave shows that the ratio of the at d. to the ignition temp. is a measure of the prob- bility of detonation. Louis Goldman



SHCHELKIN, K.

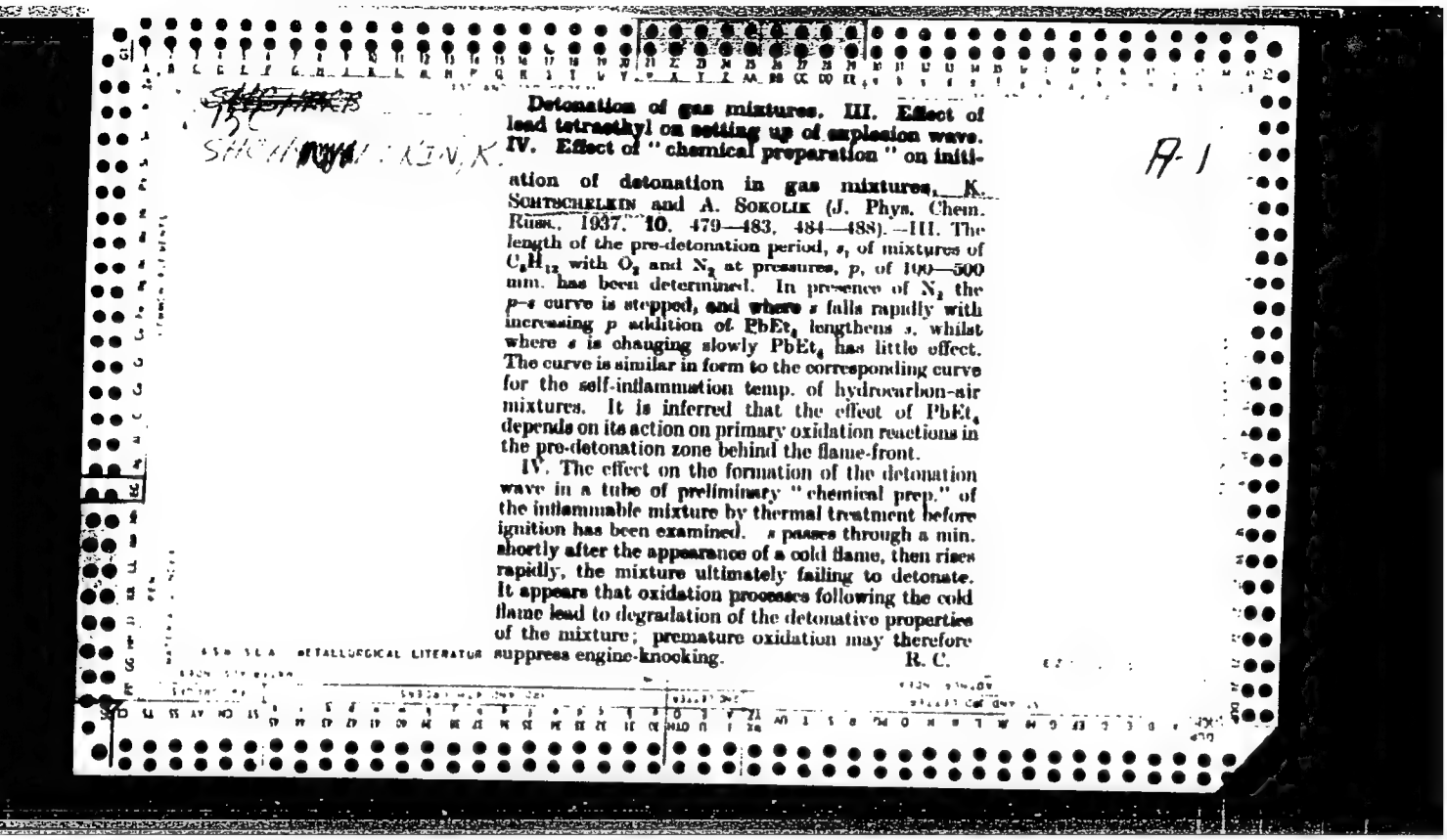
Change of velocity of an explosion wave with pressure
A. Sokolik and K. Shchelkin. *Compt. rend. acad. sci. U. R. S. S.* **3**, 102-4 (in English) 104-5 (1934). —Measurements of velocity of explosion were made by the photographic method in an Fe tube contg 2 glass segments 16 m. apart. For mixts. in which dissocn. causes an increase in vol. ($2H_2O + O_2$ and $CH_4 + 2O_2$), marked increase in vel. resulted when the initial pressure was increased from 300 to 750 mm. Where no change in vol. results from dissocn., as with $H_2 + Cl_2 = 2HCl$, the increase in velocity with increasing pressure was negligible. Jouguet's method of calcn., with allowance for dissocn., gives the same change in velocity although calcd. and observed values differ.
C. G. Storm

A5a S1A METALLURGICAL LITERATURE CLASSIFICATION



An attempt to calculate the frequency of the detonation spin. K. Shchelkin. *J. Exptl. Theoret. Phys.* (U. S. S. R.) **4**, 720-33(1934). The detonation spin is calcd. as the frequency of stationary rotation in the case of helicoidal motion of an ideal liquid. The value $N = \frac{W_1 J_1(1.84)}{\pi d J_0(1.84)} = \frac{1.84 D}{\pi d \mu}$, where N = detonation spin, $D = \mu W_1$, W_1 = partial speed along tube, μ = degree of compression of the wave front, d = tube diam., shows good qual. agreement with the values found experimentally by Bone and Fraser (*C. A.* **26**, 1788). The equation can be put in the form of the Strochal relation $N = S(W, r)$ for liquid helicoidal motion.

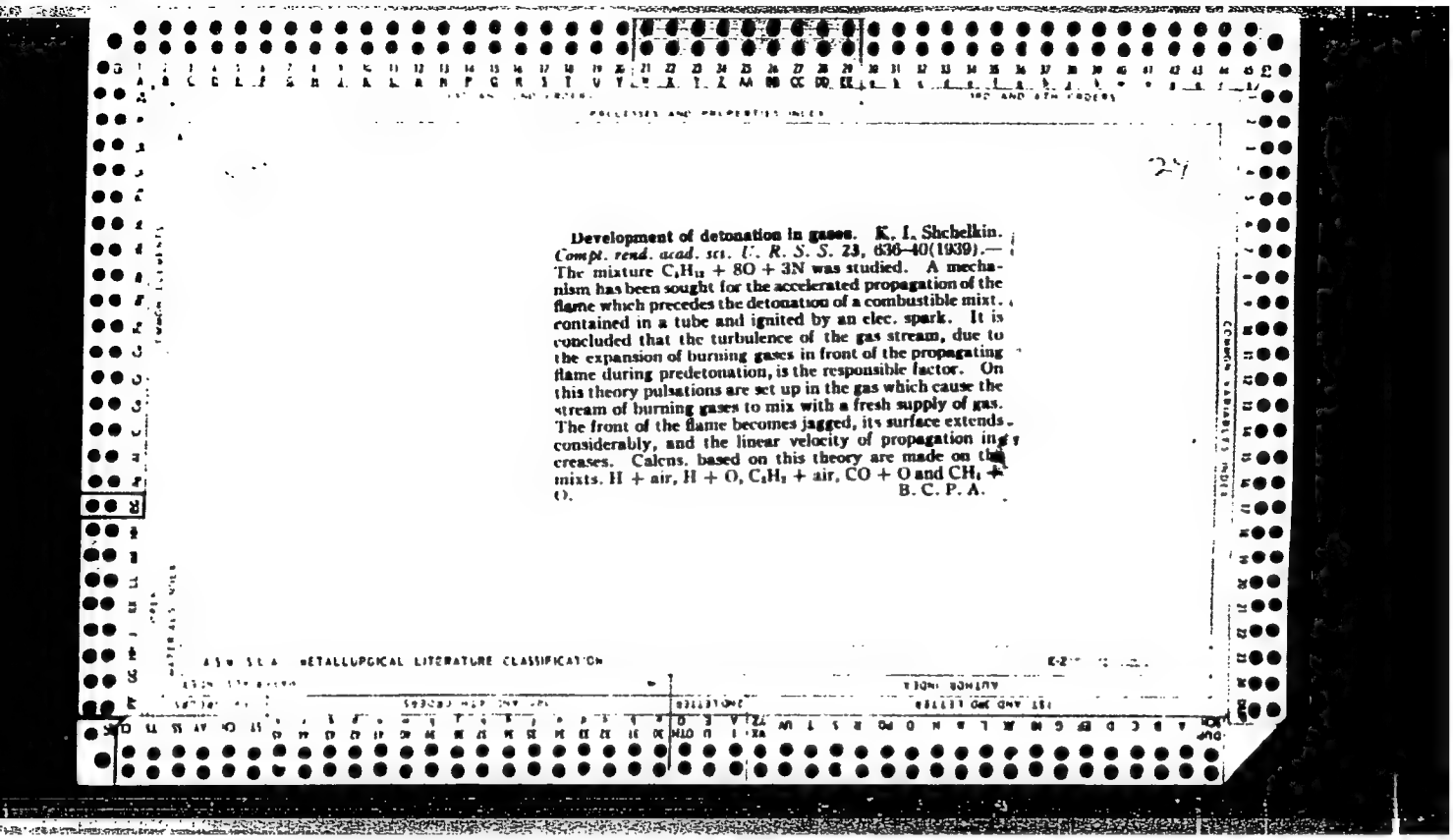
F. H. Rathmann



Detonation of gas mixtures. III. Effect of lead tetraethyl on setting up of explosion wave. IV. Effect of "chemical preparation" on initiation of detonation in gas mixtures. K. SCHTSCHELKIN and A. SOKOLIK (J. Phys. Chem. Russ., 1937, **10**, 479—483, 484—488).—III. The length of the pre-detonation period, s, of mixtures of C_6H_{12} with O_2 and N_2 at pressures, p, of 100—500 mm. has been determined. In presence of N_2 the p–s curve is stepped, and where s falls rapidly with increasing p addition of $PbEt_4$ lengthens s, whilst where s is changing slowly $PbEt_4$ has little effect. The curve is similar in form to the corresponding curve for the self-inflammation temp. of hydrocarbon-air mixtures. It is inferred that the effect of $PbEt_4$ depends on its action on primary oxidation reactions in the pre-detonation zone behind the flame-front.

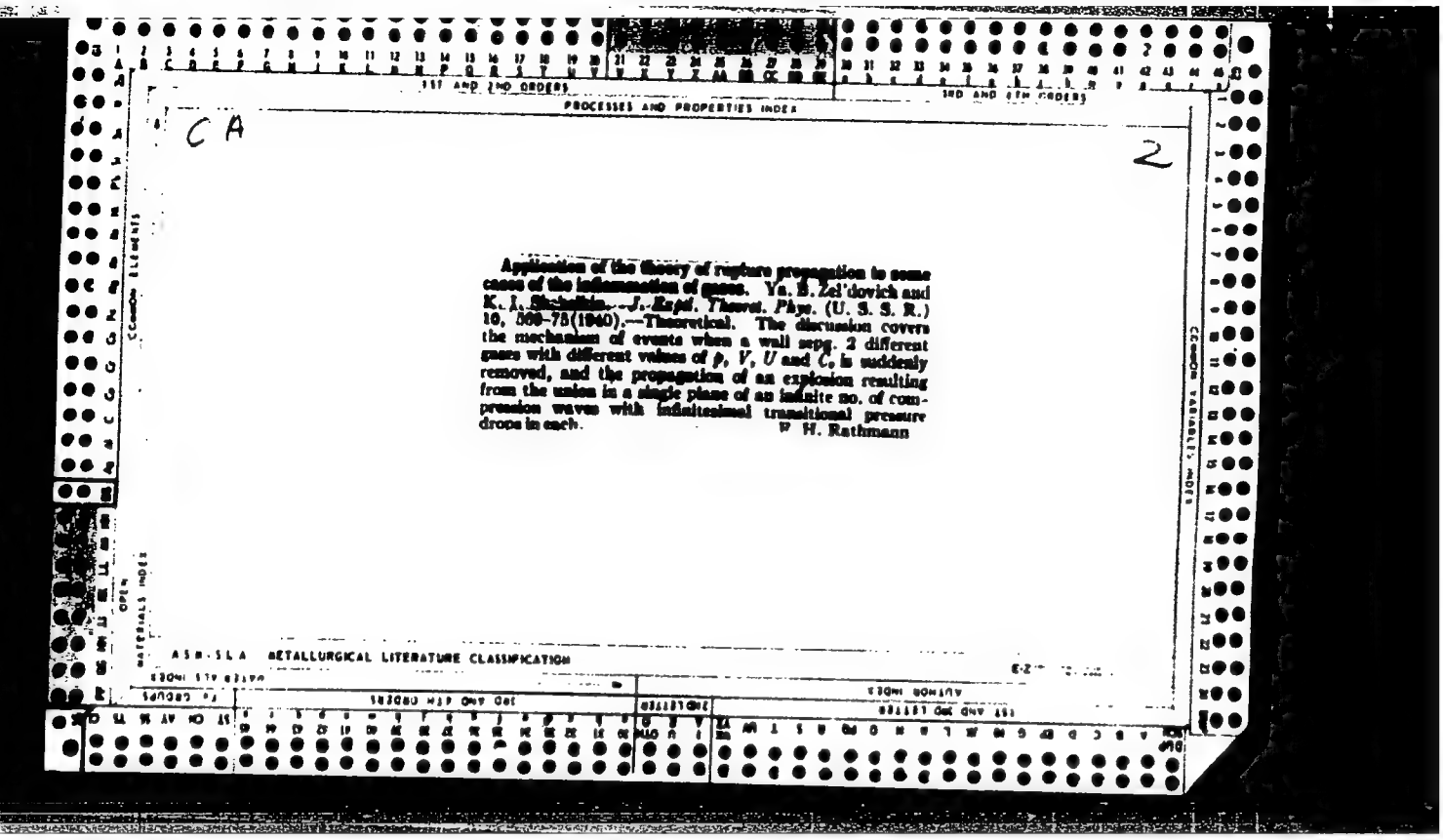
IV. The effect on the formation of the detonation wave in a tube of preliminary "chemical prep." of the inflammable mixture by thermal treatment before ignition has been examined. s passes through a min. shortly after the appearance of a cold flame, then rises rapidly, the mixture ultimately failing to detonate. It appears that oxidation processes following the cold flame lead to degradation of the detonative properties of the mixture; premature oxidation may therefore suppress engine-knocking.

R. C.



Development of detonation in gases. K. I. Shchelkin. *Compt. rend. acad. sci. U. R. S. S.* **23**, 636–40(1939).— The mixture $C_2H_{12} + 8O + 3N$ was studied. A mechanism has been sought for the accelerated propagation of the flame which precedes the detonation of a combustible mixt. contained in a tube and ignited by an elec. spark. It is concluded that the turbulence of the gas stream, due to the expansion of burning gases in front of the propagating flame during predetonation, is the responsible factor. On this theory pulsations are set up in the gas which cause the stream of burning gases to mix with a fresh supply of gas. The front of the flame becomes jagged, its surface extends considerably, and the linear velocity of propagation increases. Calcns. based on this theory are made on the mixts. $H + air$, $H + O$, $C_2H_2 + air$, $CO + O$ and $CH_4 + O$.

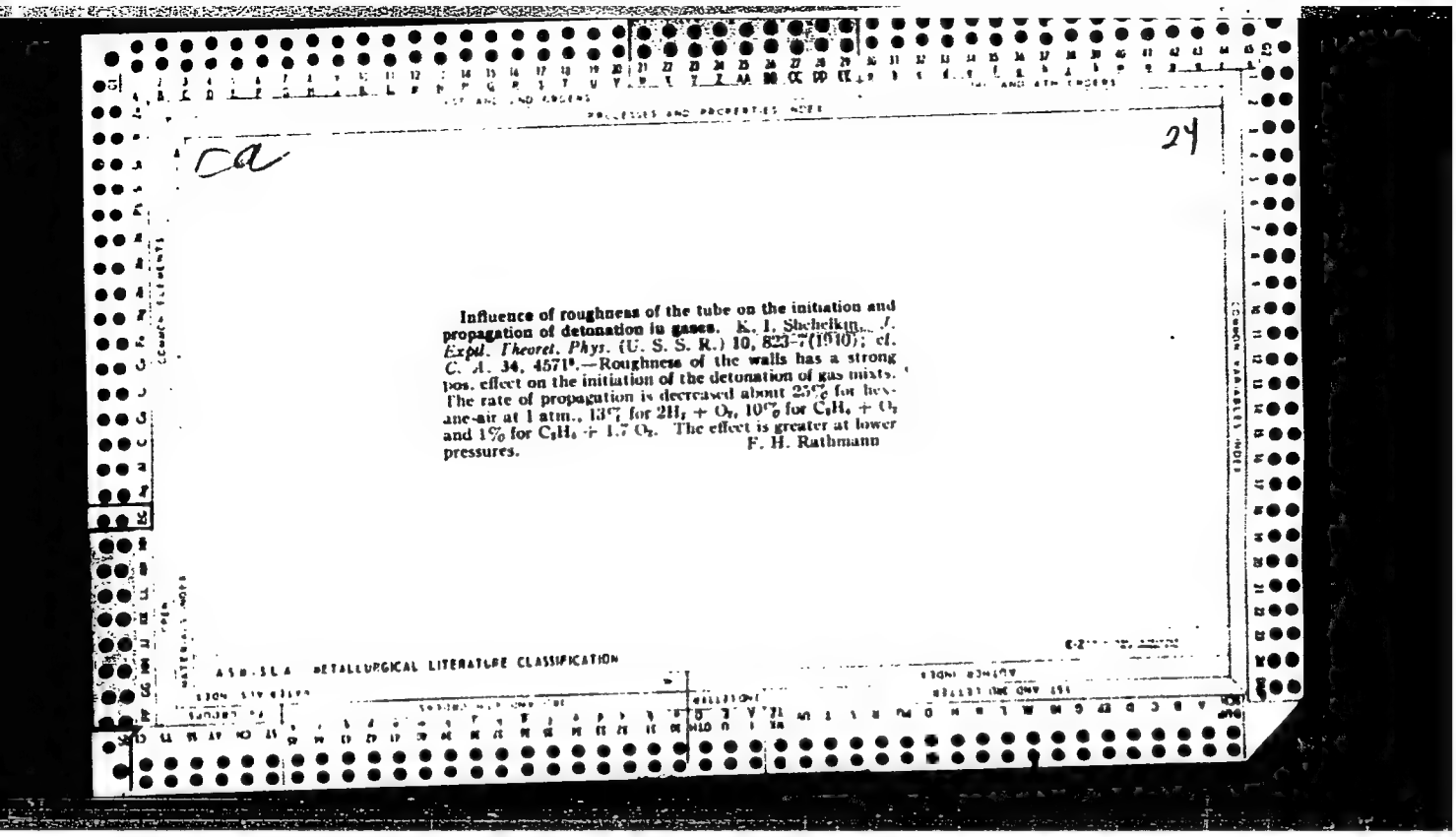
B. C. P. A.



CA

2

Application of the theory of rupture propagation to some cases of the inflammation of gases. Ya. B. Zel'dovich and K. I. Shchelkin. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 10, 569–75(1940).—Theoretical. The discussion covers the mechanism of events when a wall sepg. 2 different gases with different values of p, V, U and C_v is suddenly removed, and the propagation of an explosion resulting from the union in a single plane of an infinite no. of compression waves with infinitesimal transitional pressure drops in each.
W. H. Rathmann



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24

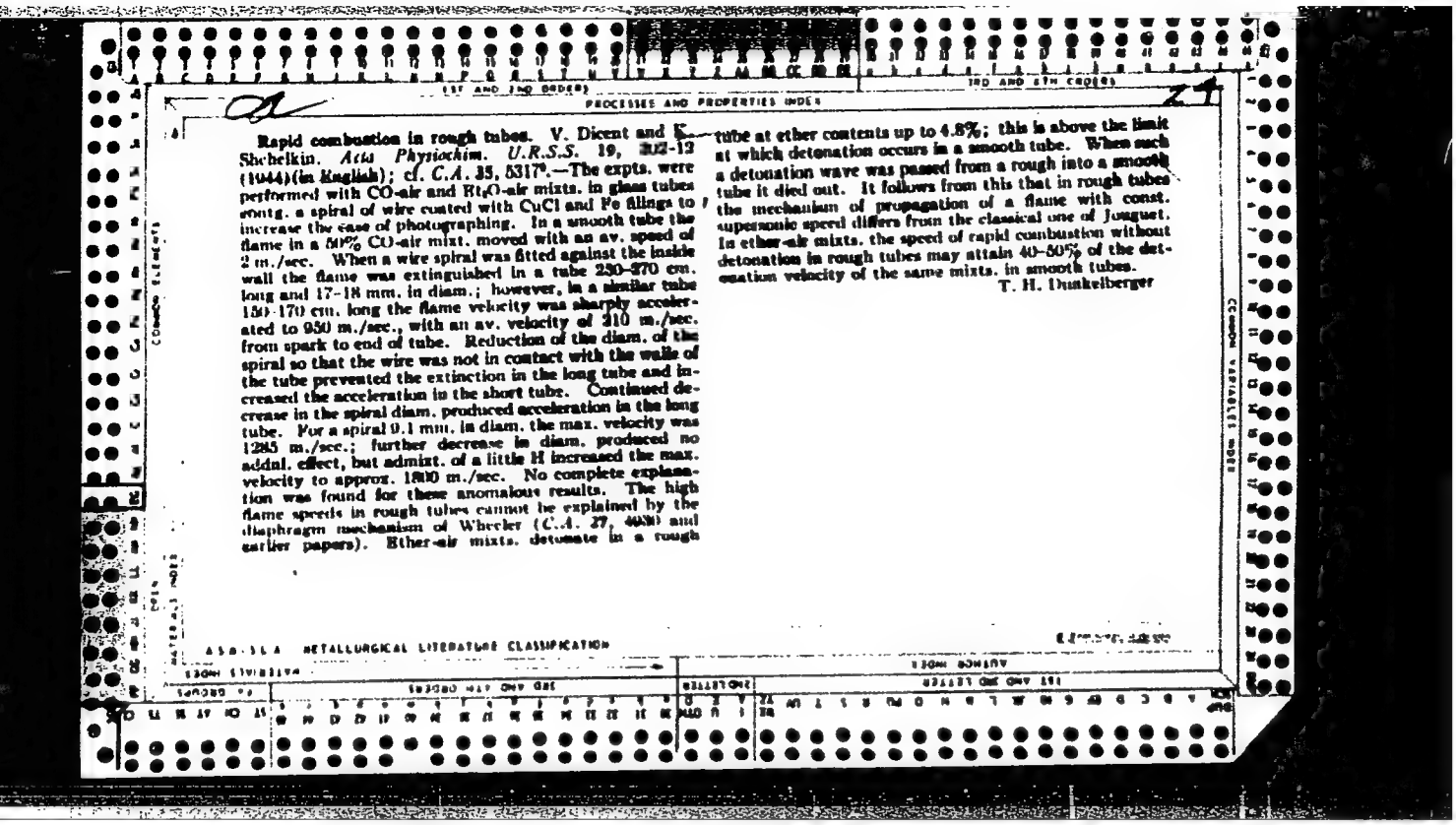
Influence of roughness of the tube on the initiation and propagation of detonation in gases. K. I. Shchelkin. *J. Expil. Theoret. Phys.* (U. S. S. R.) 10, 823–7(1940); cf. *C. A.* 34, 4571⁹.—Roughness of the walls has a strong pos. effect on the initiation of the detonation of gas mixts. The rate of propagation is decreased about 25% for hexane-air at 1 atm., 13% for $2H_2 + O_2$, 10% for $C_2H_2 + O_2$ and 1% for $C_2H_2 + 1.7\ O_2$. The effect is greater at lower pressures.

F. H. Rathmann

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

F

2157. COMBUSTION IN A TURBULENT STEAM. Shchelkin K I (J. tech phys. (R.S.S.R.) 1943, 18, 520-30; chem abst 1945, 39, 795). As the degree of turbulence increased to a magnitude comparable with the width of the front of normal combustion, the rate of combustion at the flame front begins to be detd. by the degree of mixing and agitation. At a turbulence greater than the width of the front of normal combustion, the rate of flame propagation grows hyperbolically in respect to the pulsation rate; at high pulse rates the relation may be considered to be linear, while at low rates the effedt of turbulence is of a second order of magnitide. The literature on flame speeds of various fuels in motors at different speeds confirms the theoretical considerations if it is assumed that the increase of combustion rate in a motor is detd. by turbulence.

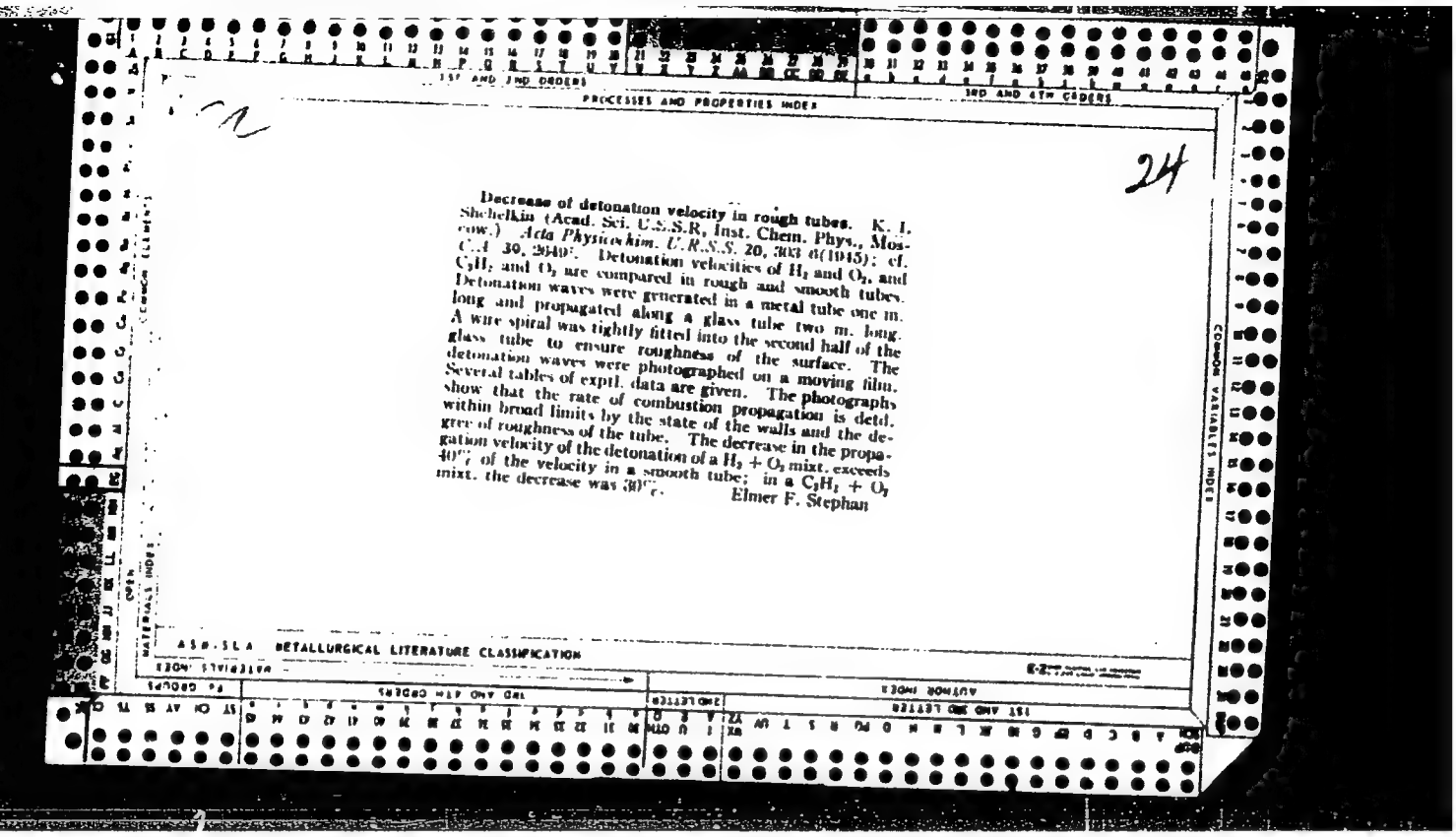


PROCESSES AND PROPERTIES INDEX

Rapid combustion in rough tubes. V. Dicent and K. Shchelkin. *Acta Physiochim. U.R.S.S.* 19, 202-12 (1944)(in English); cf. *C.A.* 38, 5317⁹.—The expts. were performed with CO-air and Et_2O-air mixts. in glass tubes contg. a spiral of wire coated with CuCl and Fe filings to increase the ease of photographing. In a smooth tube the flame in a 50% CO-air mixt. moved with an av. speed of 2 m./sec. When a wire spiral was fitted against the inside wall the flame was extinguished in a tube 230–270 cm. long and 17–18 mm. in diam.; however, in a similar tube 150–170 cm. long the flame velocity was sharply accelerated to 930 m./sec., with an av. velocity of 310 m./sec. from spark to end of tube. Reduction of the diam. of the spiral so that the wire was not in contact with the walls of the tube prevented the extinction in the long tube and increased the acceleration in the short tube. Continued decrease in the spiral diam. produced acceleration in the long tube. For a spiral 9.1 mm. in diam. the max. velocity was 1285 m./sec.; further decrease in diam. produced no addnl. effect, but admixt. of a little H increased the max. velocity to approx. 1800 m./sec. No complete explanation was found for these anomalous results. The high flame speeds in rough tubes cannot be explained by the diaphragm mechanism of Wheeler (*C.A.* 27, 4430) and earlier papers). Ether-air mixts. detonate in a rough tube at ether contents up to 4.8%; this is above the limit at which detonation occurs in a smooth tube. When such a detonation wave was passed from a rough into a smooth tube it died out. It follows from this that in rough tubes the mechanism of propagation of a flame with const. supersonic speed differs from the classical one of Jouguet. In ether-air mixts. the speed of rapid combustion without detonation in rough tubes may attain 40–50% of the detonation velocity of the same mixts. in smooth tubes.

T. H. Dunkelberger

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



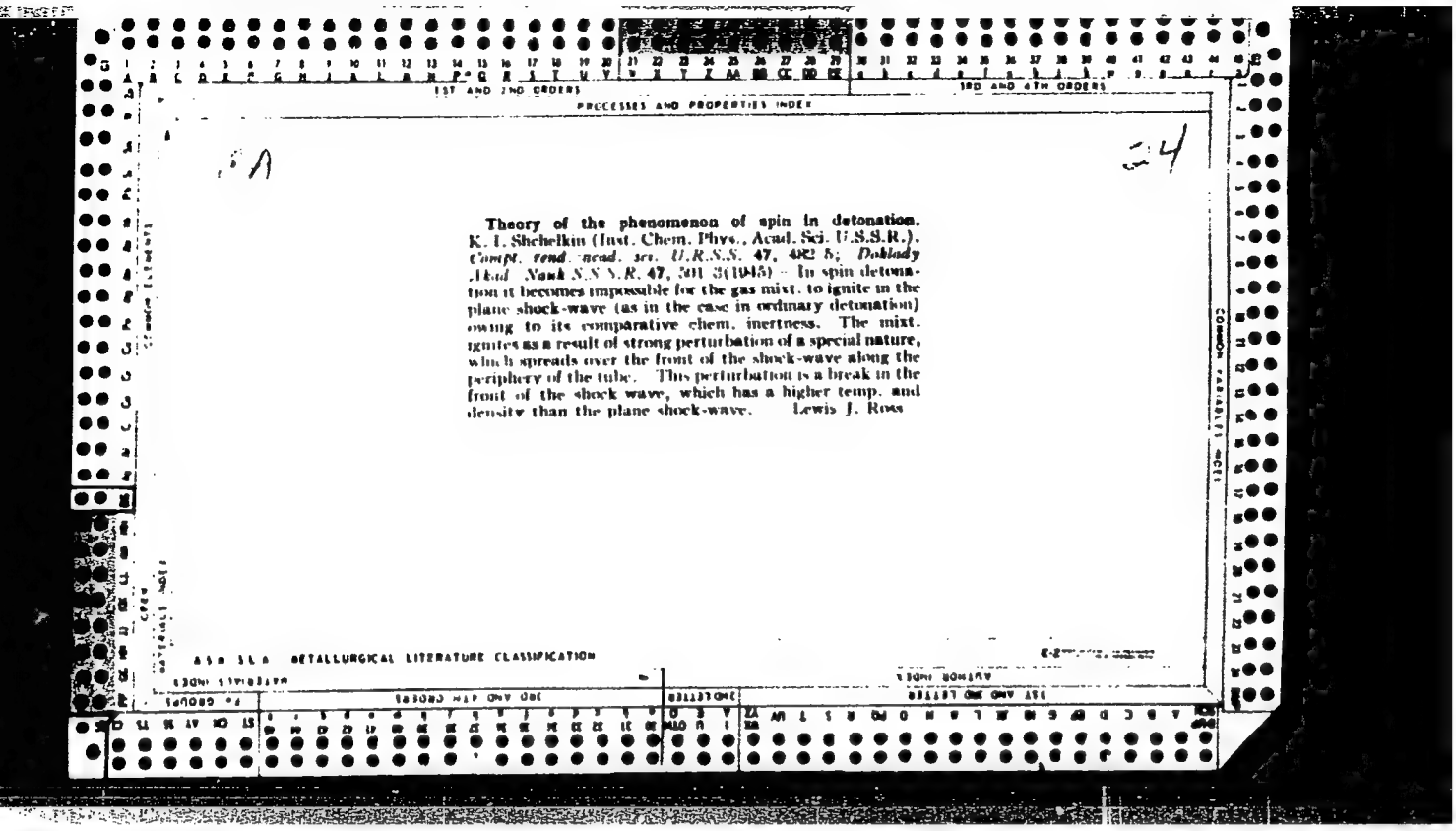
PROCESSES AND PROPERTIES INDEX

24

Decrease of detonation velocity in rough tubes. K. I. Shchelkin (Acad. Sci. U.S.S.R, Inst. Chem. Phys., Moscow.) *Acta Physicochim. U.R.S.S.* 20, 303 6(1945); cf. C.A. 39, 2940⁵. Detonation velocities of H_2 and O_2, and C_3H_8 and O_2 are compared in rough and smooth tubes. Detonation waves were generated in a metal tube one m. long and propagated along a glass tube two m. long. A wire spiral was tightly fitted into the second half of the glass tube to ensure roughness of the surface. The detonation waves were photographed on a moving film. Several tables of expil. data are given. The photographs show that the rate of combustion propagation is detd. within broad limits by the state of the walls and the degree of roughness of the tube. The decrease in the propagation velocity of the detonation of a $H_2 + O_2$ mixt. exceeds 40% of the velocity in a smooth tube; in a $C_3H_8 + O_2$ mixt. the decrease was 30%.

Elmer F. Stephan

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

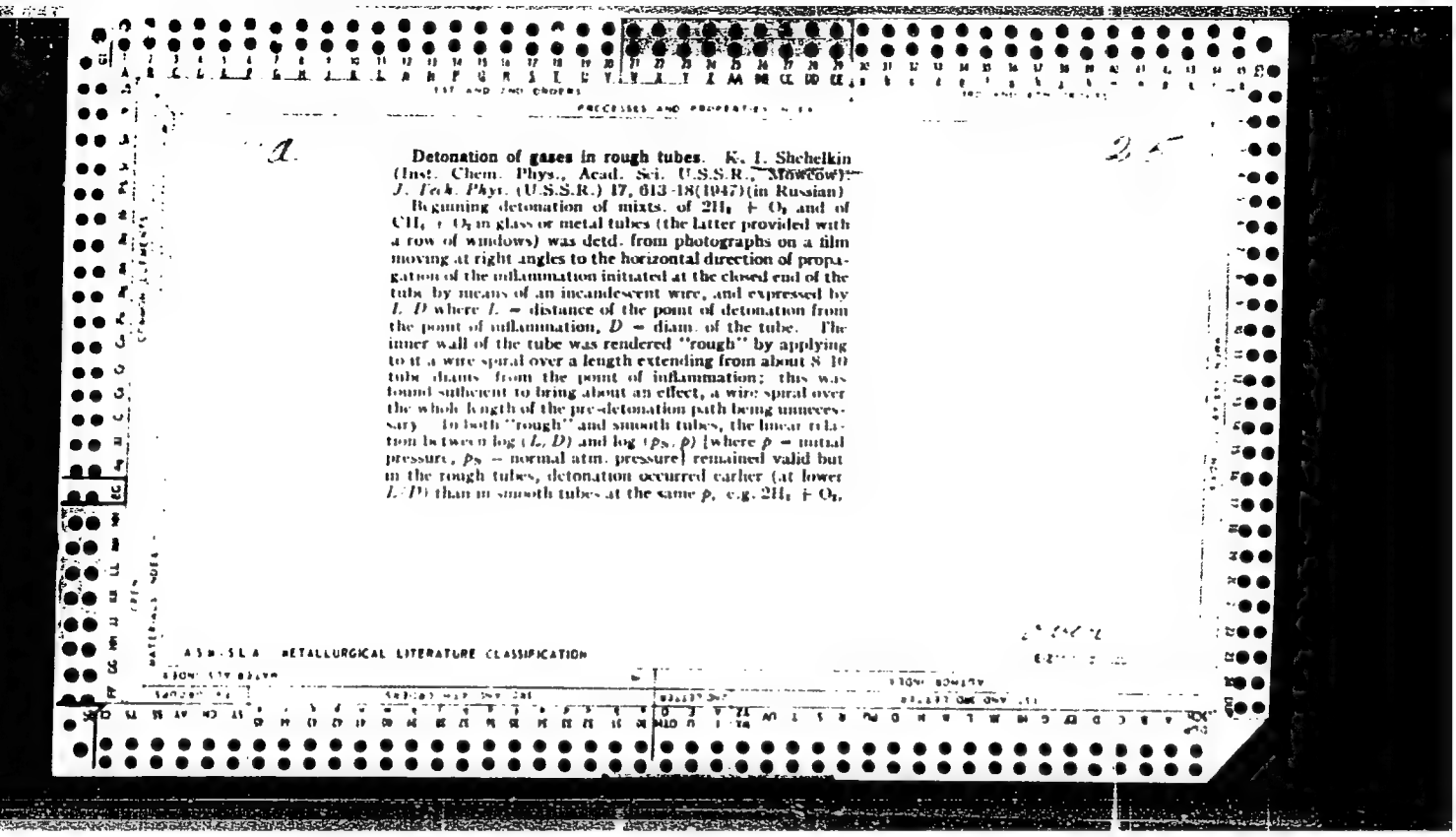
3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

34

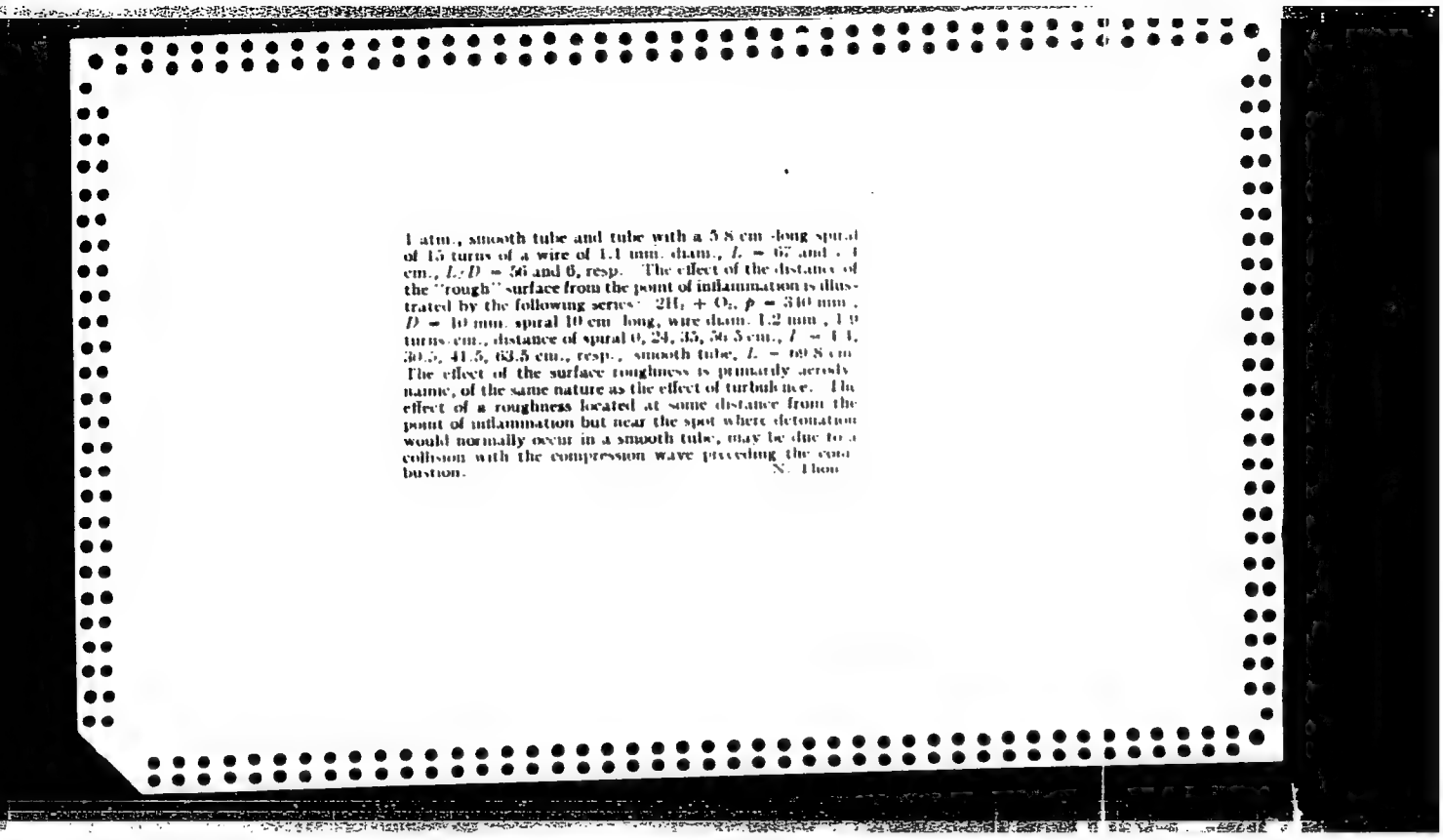
Theory of the phenomenon of spin in detonation. K. I. Shchelkin (Inst. Chem. Phys., Acad. Sci. U.S.S.R.). *Compt. rend. acad. sci. U.R.S.S.* **47**, 482 5; *Doklady Akad. Nauk S.S.S.R.* **47**, 301 3(1945). — In spin detonation it becomes impossible for the gas mixt. to ignite in the plane shock-wave (as in the case in ordinary detonation) owing to its comparative chem. inertness. The mixt. ignites as a result of strong perturbation of a special nature, which spreads over the front of the shock-wave along the periphery of the tube. This perturbation is a break in the front of the shock wave, which has a higher temp. and density than the plane shock-wave. Lewis J. Ross

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



Detonation of gases in rough tubes. K. I. Shchelkin (Inst. Chem. Phys., Acad. Sci. U.S.S.R., Moscow). *J. Tech. Phys.* (U.S.S.R.) 17, 613-18(1947)(in Russian)

Beginning detonation of mixts. of $2H_2 + O_2$ and of $CH_4 + O_2$ in glass or metal tubes (the latter provided with a row of windows) was detd. from photographs on a film moving at right angles to the horizontal direction of propagation of the inflammation initiated at the closed end of the tube by means of an incandescent wire, and expressed by L/D where L = distance of the point of detonation from the point of inflammation, D = diam. of the tube. The inner wall of the tube was rendered "rough" by applying to it a wire spiral over a length extending from about 8-10 tube diams. from the point of inflammation; this was found sufficient to bring about an effect, a wire spiral over the whole length of the pre-detonation path being unnecessary. In both "rough" and smooth tubes, the linear relation between log (L/D) and log (p_s/p) [where p = initial pressure, p_s = normal atm. pressure] remained valid but in the rough tubes, detonation occurred earlier (at lower L/D) than in smooth tubes at the same p, e.g. $2H_2 + O_2$.



1 atm., smooth tube and tube with a 5.8 cm.-long spiral of 15 turns of a wire of 1.1 mm. diam., L = 67 and 4 cm., L/D = 56 and 6, resp. The effect of the distance of the "rough" surface from the point of inflammation is illustrated by the following series: $2H_2 + O_2$, p = 340 mm., D = 10 mm. spiral 10 cm. long, wire diam. 1.2 mm., 1.9 turns/cm., distance of spiral 0, 24, 35, 50.5 cm., L = 44, 30.5, 41.5, 63.5 cm., resp., smooth tube, L = 69.8 cm. The effect of the surface roughness is primarily aerodynamic, of the same nature as the effect of turbulence. The effect of a roughness located at some distance from the point of inflammation but near the spot where detonation would normally occur in a smooth tube, may be due to a collision with the compression wave preceding the combustion.

N. Thon

80/910 536.46

On the Question of Turbulent Combustion and Combustion Phases

Izv.Akad.Nauk,Otd.Tekn. Nauk
(3),463-471
1953
U.S.S.R.

K.I. Shchelkin

This represents a contribution to the discussion of an article b Sokolik, Voinov, Sviridov entitled "Influence of Chemical and Turbulence factors in the process of combustion" (ibid.(12)1949). By analyzing the thecry of the combustion of gases the author advances certain conditions under which the results for the apparent velocity of combustion propagation as obtained by Sokolik etc. could be compared with theoretical regularities in the turbulent velocity of the flame. He further supported the view of the above authors that the process of combustion should be divided into certain phases, and that the turbulence factor plays a dominating role in the combustion process in its main phase.(Bibl.3)

7/15/54

SHCHELKIN, K.I.

USSR

536.461

11007. Transition of the slow-rate combustion into detonation. K. I. SHCHELKIN. *Zh. éksper. teor. Fiz.*, 24, No. 5, 589–600 (1953) *In Russian.*

Discusses the two fundamental ways of propagation of combustion in gaseous mixtures from one layer to another, due (1) to conduction and diffusion, and (2) to compression in a shock wave (detonation). The elementary theory of transition from slow combustion to detonation is set forth; it is shown that the pre-detonation acceleration of combustion in pipes is mainly caused by the effect of the motion of the non-burned gas and, in the first place, by the effect of its turbulence on the velocity of the flame propagation. The distance between the starting-point of the flame and the detonation point is found to be proportional to $c_0^2 D/C^n k^m (\pi - 1)^m u_n^2$, where c_0 is the velocity of sound in a non-turbulent gas; D, the pipe diameter; C, a factor equal to the area ratio of the flame front surface to the cross-section of the pipe; k, the degree of turbulence; π, the ratio of gas volumes before, and after, combustion; and u_n, the normal flame velocity. The exponents n and m are 4 and 3 for weak turbulence, and 3 and 2 for strong turbulence, respectively.

F. LACHMAN

9

USSR/Physics - Combustion FD-3028

Card 1/1 Pub. 41 - 12/15

Author : Troshin, Ya. K. and Shchelkin, K. I., Moscow

Title : Structure of the front of a spherical flame and the instability of normal combustion

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 9, 160-166, Sep 55

Abstract : Describes structure of the frontal area of a spherical flame and lists conditions under which instability in the flat front of a normal flame occurs. Reviews previous work in this field. Presents experimental methodology. Extensive use made of cameras in the study of flame structure. Photographs, graphs. Four references, all USSR.

Institution:

Submitted : May 21, 1955

FD-2875

SHCHELKIN, K. I.

USSR/Physics - Detonation

Card 1/1 Pub. 146 - 12/26

Author : Shchelkin, K. I.

Title : Phenomena close to the place of occurrence of detonation in a gas

Periodical : Zhur. eksp. i teor. fiz., 29, 2(8) August 1955, 221-226

Abstract : The author considers the phenomena that take place close to where detonation occurs. In particular he shows that detonation in a gas, in agreement with his earlier developed theory (ibid., 24, 589, 1953; DAN SSSR, 34, 747, 1949), can occur not only at a certain distance ahead of the front of slow burning but also immediately next to it. Four references: e.g. Ya. B. Zel'dovich and K. I. Shchelkin, ZhETF, 10, 569, 1940; Kh. A. Rakipova, Ya. K. Troshin, and K. I. Shcheklin, Zhur. tekhn. fiz., 17, 1397, 1947.

Institution : Institute of Chemical Physics, Academy of Sciences USSR

Submitted : May 10, 1954

SOV/24-59-2-22/30

AUTHOR: Shchelkin, K. I. (Moscow)

TITLE: Remarks on the Measurement of Propagation Velocity in Turbulent Combustion (Zamechaniya ob izmerenii skorosti rasprostraneniya turbulentnogo goreniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 2, pp 137-138 (USSR)

ABSTRACT: In the investigation of Bolz and Burlage (Ref 1), unexpectedly low values were obtained for the propagation velocity of turbulent combustion. It is suggested that in working out their results, Bolz and Burlage introduced a systematic error by neglecting the width of the combustion zone. A semi-empirical correction is derived to allow for this width, and the resulting corrected values are larger and more reasonable in magnitude. There are 2 English references.

SUBMITTED: January 14, 1959.

Card 1/1